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## VENEREAL AND NONVENEREAL GRANULOMAS OF THE VULVA


EMMERICH VON HAAM, M.D.

COLUMBUS, OHIO


Granulomas are circumscribed masses of granulation tissue formed in the course of the productive phase of inflammation. They may appear on the surface of ulcerations and in the wall of ulcers or may form in any area of tissue destruction with disturbed or incomplete regeneration. Granulomas are composed histologically of newly formed capillaries, fibroblasts, histiocytes and the cells of inflammatory exudates, and they vary in their microscopic pattern according to the infectious agent, the duration of the infection and the reactivity of the diseased organism. Granuloma and chronic inflammation are not completely synonymous processes, although they often appear intimately linked with each other (Lubarsch [1]). They are most logically classified according to their etiologic factor, which in the majority of cases is an infectious agent. These infectious granulomas then can be differentiated according to the various types of organism, a distinction which is easy for some infections and difficult or even impossible for many others.

In the vulva infectious granulomas occur frequently, and their correct differentiation offers no little problem for the physician. In most textbooks their classification is confusing and often without etiologic or pathologic background, and with increased knowledge of the pathogenic bacteria of the external genitalia a reclassification is considered inevitable (Miller [2]). Many physicians and most of the laity still regard a genital lesion as a manifestation of a venereal disease, an erroneous point of view which undoubtedly has caused many unnecessary upsets in the social and emotional life of the patient. I have therefore stressed a subdivision of pudendal lesions according to venereal and nonvenereal infections as highly desirable since it emphasizes the fundamental difference in the diagnostic aspects of the two groups. I then define as venereal all those lesions which are infectious and are usually transmitted by intercourse. Syphilis, gonorrhea and chancroid are undoubtedly well recognized venereal infections which may produce pudendal granulomas. Venereal lymphogranuloma has only lately been recognized as a venereal disease by the legislation of some countries, although its venereal character is definitely established (Stannus [3]). Inguinal granuloma and fusospirochetosis, which have been introduced in the American literature as the fourth and the fifth venereal disease, are not recognized universally as such, and many investigators deny their venereal nature (Greenblatt and co-workers,[4] Campbell [5]). I have had no so-called "partner cases" in my group of fusospirochetal infections, but I believe that inguinal granuloma can justly be regarded as a venereal infection.

The differential diagnosis of the venereal and the nonvenereal granuloma, especially of the vulva, is admittedly extremely difficult and often impossible. Only with the aid of additional laboratory methods is one able to recognize the true cause of many of these chronic lesions. This is especially true in cases of mixed etiology such as are found not infrequently in this anatomic region, which is inhabited by so many thousands of micro-organisms. By methods which I have discussed in detail (von Haam [6]) I have analyzed a large group of consecutively observed acute and chronic lesions of the pudenda and have attempted to establish as much as possible their true etiology. Among these, 155 cases of chronic granulating lesions of the vulva have been observed. Although they represent material much too scanty for one to draw any statistical conclusions, their tabulation is interesting evidence of the diagnostic achievements with regard to the group of vulval granulomas which can be reached by the combined use of clinical and laboratory methods. It also represents one of the few attempts to segregate vulval granulomas according to their etiology, and their distribution is typical of the kind of patients who furnished the material, with the exception of gonorrheal infections, which were not always referred to the laboratory.

### THE VENEREAL GRANULOMAS

*Syphilis.*—Syphilis was found to be the etiologic agent in eighteen cases of my series, or 11.6 per cent; three of these cases represented mixed infections and are discussed in a later section. Syphilitic granulomas may appear in any stage of the infection, although they were most common in the second stage of the disease. Primary chancres of the vulva leading to granulomatous, firm, indurated ulcerations were observed in five instances, and their characteristics are too well known to be discussed in this paper. Treponemas are not as readily found in hypertrophic forms of syphilitic chancre


From the Department of Pathology, Ohio State University College of Medicine.



Read before the Section on Obstetrics and Gynecology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.


1. Lubarsch, Otto: Entzündung: Pathologische Anatomie, Jena, Gustav Fischer, 1921, p. 547

2. Miller, N. F.: Nonspecific Infections, in Curtis, A. H.: Obstetrics and Gynecology, Philadelphia, W. B. Saunders Company, 1934, vol. 2, p. 516.

3. Stannus, H. S.: A Sixth Venereal Disease, Baltimore, William Wood & Co., 1933.

4. Greenblatt, R. B.; Torpin, Richard, and Pund, E. R.: Extragenital Granuloma Inguinale, Arch. Dermat. & Syph. **38**: 358 (Sept.) 1938. Greenblatt, R. B., and Wright, J. C.: The Significance of Fusospirillosis in Genital Lesions, Am. J. Syph., Gonor. & Ven. Dis. **20**: 654 (Nov.) 1936.

5. Campbell, M. F.: Etiology of Granuloma Inguinale, with a Report of Eighteen Cases, Ven. Dis. Inform. **9**: 93 (March) 1928.

6. von Haam, Emmerich: The Laboratory Diagnosis of Venereal Lesions, Urol. & Cutan. Rev. **42**: 412 (June) 1938.

as in the acute ulcerative stage, although in no case was the diagnosis made without positive evidence in the microscope. Eight cases of secondary syphilids were observed, some of them in the typical form of broad condylomas. In all instances the dark field examination or the smear stained with Fontana's method again furnished the deciding clue for the diagnosis, although the correct diagnosis was suggested in many instances by the clinical examination. Two cases of tertiary syphilis of the vulva came under observation; in both gummatous ulcers were accompanied by induration and "cold" labial edema (Stookey and Polsky [7]). Smears from both lesions contained no organisms, and also the Wassermann reaction failed in one instance. The diagnosis of these spirochete-negative granulomas rests principally on the biopsy, which usually can be easily secured. The marked predominance of plasma cells, the perivascular type of infiltration and the intimal proliferation of the smaller and middle-sized vessels, together with the evidence of many newly formed capillaries, are characteristic of this disease. I should like to emphasize here that the lymph vessels do not partake in the inflammatory process and that the much publicized Langhans giant cells are not characteristic of a syphilitic infection. Because of the frequently superimposed pyogenic infection, the deeper layer of the tissues should be studied for the specific changes. Demonstration of the specific organism in the tissues requires special technic and cannot be recommended for the general practitioner. In tertiary granulomas the demonstration of Treponema pallidum is difficult, while in the primary and secondary lesions its demonstration is easy and has distinctly diagnostic value. I have used the methods of Levaditi and Warthin and the silver mirror method of Steiner with equal success (von Haam [6]).

TABLE 1.—*Classification of One Hundred and Fifty-Five Cases of Granuloma of the Vulva*

| | White | Negro | Total | Percentage |
|---|---|---|---|---|
| Venereal granulomas | 27 | 77 | 104 | 67.1 |
| Syphilis | 4 | 11 | 15 | 9.6 |
| Gonorrhea | 5 | 6 | 11 | 7.1 |
| Chancroid | 10 | 19 | 29 | 18.7 |
| Venereal lymphogranuloma | 7 | 30 | 37 | 23.8 |
| Inguinal granuloma | 1 | 11 | 12 | 7.9 |
| Nonvenereal granulomas | 10 | 21 | 31 | 20.0 |
| Pyogenic granuloma | 2 | 10 | 12 | 7.7 |
| Saprophytic granuloma | 4 | 4 | 8 | 5.2 |
| Fusospirochetal granuloma | 3 | 7 | 10 | 6.5 |
| Tuberculosis | 1 | 0 | 1 | 0.6 |
| Granulomas of mixed etiology | 2 | 9 | 11 | 7.1 |
| Granulomas of unknown etiology | 2 | 7 | 9 | 5.8 |

*Gonorrhea.*—In fifteen cases of my series a gonorrheal infection could be elicited as the probable cause of a granulomatous lesion of the vulva. This infection is of little importance as an etiologic factor of vulval granulomas since the thickly coated mucous membrane of the vulva is very resistant to the invasion of the organisms. I have observed small erosions around the female urethra which if persistent for some time assume a slightly granulomatous character. Pointed condylomas, which are found in the moist parts of the vulva and spread often over the labia majora and the perineum, originate frequently as a consequence of the irritative character of gonorrheal discharge. They are not specific for this infection. They are usually painful and may grow into immense cauliflower-like masses. The histologic picture shows a marked hyperplasia of the epithelium which grows on a scanty stroma with a rich network of capillaries. A few foci of round cell infiltration can be noted. The epithelium is usually edematous and lacks keratinization. Bacteriologic examinations failed to reveal the gonococcus, even in cases of verified gonorrheal infections.

*Chancroid.*—The Ducrey bacillus is responsible more frequently for acute ulcerations of the vulva than for granulomatous lesions. However, granulation tissue appeared at the bottoms of the ulcerations in twenty-nine of my cases, justifying the term of chancroidal granuloma. The importance of a secondary infection of pyogenic organisms for the formation of chancroidal granuloma is still disputed. The histologic picture of chancroidal ulcerations is characterized rather by the absence of specific manifestations than by their presence. Pund and Greenblatt [8] stressed the superficial necrosis and an acute perivasculitis and endovasculitis as characterizing the microscopic changes of chancroidal ulcers. I believe that these changes are rather significant of a superimposed infection with fusospirochetal organisms, which occurs frequently. I have had an opportunity to examine a few chronic ulcerations of a purely chancroidal nature and was impressed by the pyogenic nature of the granulation tissue, the multiple scattered polymorphonuclear leukocytes, the rather superficial and narrow margin of necrosis and the absence of any arteritic changes. In every one of these instances the granulation tissue did not extend beyond the margin of the ulcer and seemed to form only its granulating bottom. I made biopsies of two phagedenic ulcers which showed extensive necrosis and marked endarteritis. However, here, invasion of fusospirochetal organisms could be demonstrated and was interpreted as the true cause of this complication. Pure culture of the Ducrey bacillus has been obtained from small granulating ulcers, while larger and more destructive lesions always show mixed invasion. Since it is impossible to demonstrate the organism in the tissues, I do not believe that this lesion can be diagnosed from the biopsy without other clinical or bacteriologic evidence. A chancroidal infection should be suspected in any vulval lesions which histologically show ulcerations whose bottoms are formed by nonspecific granulation tissue.

*Venereal Lymphogranuloma.*—Granulomatous primary lesions (chancroidal type) are rarely observed (Bory [9]). In the later stages of this disease, however, extensive granulomas may appear, leading to severe mutilation of the vulva. Because of the preponderance of the Negro race among my patients thirty-seven cases of venereal lymphogranuloma of the vulva were observed. The disease represents a combination of ulcerations and of productive inflammation leading to tumor-like enlargement of the external genitalia. If the enlargement is the predominant feature of the lesion, one speaks of elephantiasis of the vulva; if the process is predominantly ulcerative, it is characterized as esthiomene. The two lesions are based essentially on an identical pathologic process: a severe disorder of the submucous lymphatics with subsequent disturbance in the tissue fluid circulation. To this may be superadded a specific injurious effect of the filtrable virus, which often shows a retrograde spread from the regional lymph nodes, and secondary bacterial invasion with the establishment of pyogenic processes in the diseased vulva.

7. Stookey, P. F., and Polsky, Morris: Primary Syphilis in the Female, Urol. & Cutan. Rev. **42**: 121 (Feb.) 1938.

8. Pund, E. R., and Greenblatt, R. B.: Specific Histology of Granuloma Inguinale, Arch. Path. **23**: 224 (Feb.) 1937.

9. Bory, L.: Le chancre lymphogranulomateux, Bull. Soc. franç. de dermat. et syph. **28**: 451, 1921.

Often elephantiasis and esthiomene are combined, affecting in different degree various parts of the vulva. The macroscopic picture is rather typical and can be well differentiated from that of other granulomas. The ulcerations never occur in a healthy-appearing mucous membrane, such as is the case in chancroidal or syphilitic infections, but the surrounding parts of the ulcers are fibrosed and edematous. Elephantiasis of the vulva usually occurs asymmetrically, often strictly unilaterally, and anatomic structures having a common lymphatic drainage are usually involved together. The mucous membrane of the hypertrophied parts has a normal appearance or is the site of superficial erosions. Bright red granulation tissue is absent, and the ulcers have a ragged edematous appearance. Involvement of the perineum and the anus is frequent, and anal tags are usually external evidence of a developing inflammatory stricture of the rectum.

The essential basis of these lesions is thrombolymphangitis and perilymphangitis with a tendency to spread from the infected glands into the surrounding tissue. The changes in the lymph vessels are not merely the effect of lymph stasis (Frei) but are an expression of an actively progressing virus disease, and the virus has been isolated from surgically removed portions of a diseased vulva (Coutts [10]). This chronic progressive lymphangitis leads to edema with fibrosis and explains the indurated enlargement of the affected parts. Because of insufficient nourishment and oxygenation, the surface epithelium becomes atrophic and ulceration occurs. Pyogenic organisms invading such ulcerated areas progress swiftly and lead to severe mutilation with the formation of fistulas and sinuses. A carcinoma may finally develop (Bernstein,[11] Pund and co-workers [12]).

Microscopically the picture is characteristic and has been well described by Gougerot and Carteaud.[13] It consists in well circumscribed accumulations of neutrophilic leukocytes, eosinophils, mononuclear cells, plasma cells and endothelial cells around centers of homogeneous pink-staining material containing pyknotic and destroyed leukocytes. I occasionally observed giant cells in these small inflammatory foci, which confused the picture with syphilis. These "gommes de Nicolas Favre" are embedded in a stroma characterized by fibrosis and edema. The lymph vessels are dilated and filled with cellular exudate or clear lymph fluid. The dilatation of the lymph vessels is sometimes excessive and can be noted also beneath the surface epithelium. In the deeper parts of the section the dilatation of the lymphatics decreases somewhat, while the inflammatory reaction usually increases. Here the perilymphatic reaction around a lymph vessel close to an arteriole may give the impression of perivascular infiltrations. However, the cellular infiltration is more prominent on one side of the vessel (paravascular), and the intima of the vessels is not thickened as in syphilitic lesions.

The diffuse fibrosis which develops as a result of the chronic lymphangitis consists of bundles of thick collagenous fibers with a few cells. They develop from the depth of the lesion and do not reach quite to the epithelial surface. The subepithelial zone is usually filled by a loose, very edematous fibrous tissue in which the just described inflammatory lesions develop.

The course of vulval granulomas produced by this infection varies greatly. It is often influenced by intercurrent secondary pyogenic infections but rarely is the cause of a fatal complication. However, since the deeper lymph glands are usually involved, an inflammatory stricture frequently develops simultaneously in the rectum, which represents a serious threat to the health of the patient. The treatment of choice in the elephantiasis or esthiomene of the vulva is surgical removal of the destroyed parts. This is recommended not only in order to free the patient of this mutilating lesion but in order to remove an actual focus of infection, preventing the spreading of the virus into other parts of the body. Cases of severe venereal lymphogranuloma of the vulva require several plastic operations following the removal of the new growth.

*Inguinal Granuloma.*—This is an infectious disease of the pudenda which is widespread in the tropical countries and in the southern parts of the United States. It is conveyed by sexual intercourse and by autoinoculation, and its etiology is definitely linked with a peculiar encapsulated organism found extracellularly and intracellularly in the pus from the lesion and known as Donovan's organism. The disease is widespread among the Negro population of New Orleans, and twelve cases were among my series. The disease differs from other venereal infections in that it is predominately granulomatous in character from the beginning.

Macroscopically, it usually starts as a small papule from 1 to 4 cm. in diameter which is located on the labia minora, the skin of the mons pubis and the inguinal or perineal folds. In a few weeks this nodular lesion develops into the most commonly observed form of inguinal granuloma, the serpiginous ulcer. This starts with an excoriation of the squamous epithelium over the primary nodule and develops with abundant production of luxuriant bright red granulation tissue. The latter has the tendency to spread along the various folds of the external genitalia, and, although often painless, the lesion is annoying because of its abundant seropurulent discharge. I most frequently observed it on one of the labia, and it usually produced a contact lesion on the other side after some time. In most of the cases the ulceration, covered with this granulation tissue, shows only a tendency to spread along the surface. In a few instances, however, it will lead to severe deep mutilating ulcerations, which may expose the muscles of the bottom of the pelvis and destroy the entire vulva. In this case general malaise with fever and secondary anemia is marked, and the bacteriologic examination of the lesion reveals an abundant flora of all types of bacteria, among them the fusospirochetal group, while the characteristic Donovan bodies sometimes completely disappear from the surface secretion. It is my impression that this sudden "turn for the worse," which usually indicates this change, is the result of a secondary infection, perhaps fusospirochetosis (von Haam and D'Aunoy [14]). These deep ulcerations may lead to generalized sepsis and death.

Another kind of vulval granuloma produced by this infection is the hypertrophic type, which was observed in three instances. The surface of this lesion has an uneven buckled appearance, and the skin shows exten-

10. Coutts, W. E., and Martini Herrera, John: Experimental Transmission of Lymphogranuloma Inguinale to Guinea Pigs, J. Trop. Med. **38**: 53 (March 1) 1935.
11. Bernstein, Phineas: Lymphogranuloma Inguinale, Carcinoma and Syphilis: A Triad of Diseases Occurring in One Patient, Am. J. Obst. & Gynec. **29**: 718 (May) 1935.
12. Pund, E. R.; Greenblatt, R. B., and Huie, G. B.: The Role of the Biopsy in Diagnosis of Venereal Diseases, Am. J. Syph., Gonor. & Ven. Dis. **22**: 495 (July) 1938.
13. Gougerot, H., and Carteaud, A.: Les débuts des syndromes recto-ano-géniteaux éléphantiasiques: L'éléphantiasis localisé; la gomme du "Nicolas Favre," Ann. d. mal. vén. **28**: 881 (Dec.) 1933.
14. von Haam, Emmerich, and D'Aunoy, Rigney: Is Lymphogranuloma Inguinale a Systemic Disease? Am. J. Trop. Med. **16**: 527 (Sept.) 1936.

sive scars from previous ulcerations. Daniels [15] suggested that a blockage of the lymphatics is sometimes produced by the inflammatory process and that this in turn will lead to the hypertrophic lesion. The differential diagnosis between this lesion and elephantiasis of the vulva due to venereal lymphogranuloma rests principally on the condition of the skin covering the hypertrophic parts. In venereal lymphogranuloma the skin is thick but otherwise fairly normal, while in inguinal granuloma the skin is either severely ulcerated or shows atrophy and extensive scar formation.

A fifth group of lesions which I have observed represents the cicatricial type. In contrast to the scars representing a healing stage of the disease these scars are hypertrophic and firm and show a tendency to spread. On the basis of my histologic studies I have reached the conclusion that they do not represent a healed stage of the disease but are merely a keloid-like reaction of the diseased subcutaneous tissue. The histologic picture of inguinal granuloma is sufficiently characteristic to be recognized as typical for the infection. A short-lasting stage of subcutaneous infiltration by plasma cells, leukocytes and large mononuclear cells with epithelial hyperplasia (Gage) is followed by the development of the typical granulation tissue. It consists of numerous capillaries with an abundant number of leukocytes, plasma cells and large mononuclear cells. Some of the latter are outstanding for their foamy vacuolated plasma and have been described as typical granuloma cells by Goldzieher and Peck [16] and Pund and Greenblatt.[8] I have identified these cells with those in the smears containing the organism and the plastin bodies and regard them as endothelial cells. In the deep ulcerations the granulation tissue is largely destroyed by a necrotic process, and only a small zone of demarcation can be found between the necrotic mass and the healthy tissue. Leukocytes are often entirely absent in the necrotic area. In the hypertrophic lesions an extensive fibrous reaction in the subcutaneous tissue is observed which includes foci of active inflammation with numerous foamy endothelial cells. The lymphatics are somewhat dilated. The surface epithelium shows a varying picture of atrophy with loss of papillae and regenerative hyperplasia. In the cicatricial lesions of inguinal granuloma the characteristic changes consist of thick bundles of a collagenous fibrous tissue which includes small foci of characteristic inflammatory reaction. The collagenous tissue resembles closely the keloid masses often observed in scars of Negroes. The best method of diagnosis is the demonstration of the characteristic organism. It is observed in smears of from 60 to 80 per cent of the lesions and appears as a small encapsulated body the nucleus of which resembles a small curved bacillus. With extremely acute involvement these organisms are not encapsulated and can also be found extracellularly. They often fill vacuolated places in the plasma of the mononuclear cells and are sometimes present in such numbers that they completely obscure the structure of the cells. In the chronic condition the encapsulated forms seem to prevail. The organisms can be stained in the tissues by the methods of Wright and Giemsa or with cresyl violet. They were present in 100 per cent of my cases and formed the principal criterion of my diagnosis. Pund and Greenblatt reported their impregnation with silver stains and stressed their affinity for hematoxylin. The latter observation is not sufficiently characteristic, according to my experience, to make other stains superfluous. In true scars of inguinal granuloma no organism could be demonstrated by either method.

15. Daniels, C. W.: Ulcerating Granuloma of the Pudenda, in Allbutt, Thomas Clifford, and Rolleston, Humphry D.: A System of Medicine, London, Macmillan Company, 1907, vol. 2, p. 708.

16. Goldzieher, M., and Peck, S. M.: Granuloma Venereum (Inguinale): Studies on the Etiology and Pathology, Arch. Path. & Lab. Med. **1**: 511 (April) 1926.

### THE NONVENEREAL GRANULOMAS

Granulomatous lesions caused by a nonvenereal infection of the vulva were present in thirty-two cases, or 20 per cent of my series. They comprised the groups of tuberculous, fusospirochetal, pyogenic and saprophytic granulomas.

Pyogenic granulomas are produced by persistent infection of the vulva with a pyogenic organism of comparatively low virulence. They usually develop after an acute pyogenic lesion such as a small furuncle, erysipelas or an infected herpes blister and are characterized by a pale soft painful ulceration or a sinus with indurated edges and a watery purulent exudate. Streptococci, staphylococci or colon bacilli are seen abundantly in the smear and can be isolated from a deep scraping of the lesion. In the history of the lesion the acute stage of the pyogenic infection can usually be elicited. These granulomas usually heal spontaneously, leaving a small scar.

Fusospirochetosis of the vulva was present in ten cases as a primary infection of the lesion, while the fusospirochetal organism was demonstrated in eight granulomas of mixed etiology. The importance of this group of organisms for genital lesions has been discussed recently by Greenblatt and Wright,[4] who observed fusospirillosis only as a superimposed infection and could not accept it as a disease *sui generis*. I observed thirty-seven cases of primary fusospirochetosis among 622 cases of pudendal lesions studied in the laboratory for venereal diseases. After a careful restudy of their histories I agree with Greenblatt that one is at present not justified in including this disease among venereal infections. Primary fusospirochetosis of the vulva can be the result of autoinoculation as well as the result of sexual contact. Considering the painfulness of the lesion, one would think intercourse rather difficult for patients suffering from this infection. A generalized weakened constitution such as seen in patients recovering from a severe sickness or in persons of poor economic circumstances is probably a much more important factor for the establishment of the infection than the exposure of the vulva to the organism, which, as Pilot [17] could demonstrate, inhabits as harmless saprophyte the genitalia of many persons of both sexes. Primary lesions produced by this group of micro-organisms present acute necrotizing ulcerations which do not deserve the name of granulomas. In fact, granulation tissue is conspicuous by its absence during the acute stage of the disease. Only after the infection has subsided does one see regenerative granulation tissue attempting to fill the defect produced by the disease. During these stages I could still demonstrate fusiform bacilli in large numbers in the exudate and in the tissue sections, while the spirochetes had disappeared. Because of this granulating healing stage of fusospirochetosis I have included the infection among the group of granulomas of the vulva. Saprophytic granulomas of the vulva are caused by organisms of a mixed variety which may inhabit the vagina normally and become irritating only by marked increase in number. In this group belong the Monilia or yeast infec-

17. Pilot, Isadore: The Occurrence of Fusiform Bacilli and Spirochetes Associated with a Foreign Body in the Vagina, Am. J. Obst. & Gynec. **18**: 824 (Dec.) 1929.

tions (Plass, Hesseltine and Borts [18]), infections with Bacillus crassus (Lipschütz [19]) and diphtheroid bacilli, Trichomonas infections (Karnaky [20]) and others. They produce an epithelial irritation of the vagina, and the increased amount of discharge from the vagina will lead sometimes to epithelial excoriations of the vulva. These excoriations under the influence of the growth-stimulating serum are quickly covered with granulation tissue, which may assume the shape of pointed condylomas or of flat patches of luxuriant flesh. Removal of the irritating agent will cause a quick drying up of these granulating lesions.

### GRANULOMAS OF MIXED ETIOLOGY

Pund and Greenblatt have pointed out in a careful study the frequency of pudendal lesions of mixed etiology. Twenty-eight per cent of their series of genital ulcerations were complicated by other conditions. In our studies we have stressed similar observations in cases of coincidental venereal infections in which the Frei test gave a positive reaction (D'Aunoy and von Haam [21]); in 20.2 per cent of these cases there was a positive Wassermann reaction, in 3.2 per cent a gonorrheal infection and in 8 per cent a chancroidal infection. To unravel the complicated diagnostic problems presented by some pudendal lesions I cannot stress enough the great value of laboratory diagnosis such as furnished by cutaneous tests, serologic examinations, bacteriologic investigations and biopsies (von Haam and Lafferty [22]). In my series of 155 granulomatous lesions of the vulva I have encountered eleven lesions in which more than one infectious agent could be suggested. I have tabulated these cases and want to point out briefly the diagnostic methods used.

Every one of these cases furnished an interesting diagnostic problem, and this small group clearly demonstrates the value of laboratory methods in the diagnosis of pudendal lesions. I shall limit the discussion of table 2 to the emphasis of a few striking points. Cases 1, 3, 5, 6, 8 and 9 demonstrate that one reaction, though it is positive, has comparatively little diagnostic value and can lead to many erroneous conclusions. I cannot sufficiently emphasize that a positive Wassermann reaction or a positive cutaneous reaction has really less value for the diagnosis of a pudendal lesion than a negative reaction. But also the latter may be erroneous, as seen from case 8. To decide the primary cause of a pudendal lesion in the presence of several positive results is sometimes extremely difficult and will often require a careful consideration of the clinical history with regard to the development of the present lesion and to previous venereal infections. A thorough study of the biopsy specimen with additional use of bacteriologic tissue stains may give perhaps the best single lead for the diagnosis. The question as to when the different infections demonstrated in a vulval lesion were acquired is sometimes difficult to answer. In case 10 it could be elicited that the patient had had venereal lymphogranuloma for some time before the pyogenic infection developed. I know patients who contracted syphilis, chancroid and gonorrhea during the same intercourse; I have learned too, however, that patients of this social stratum with a pudendal lesion do not refrain from intercourse as long as pain does not force abstinence. So a secondary infection may frequently be added later, as can be deduced in case 11. To evaluate the importance of the several etiologic factors for the development of the lesion is again difficult. The best criterion will be a biopsy, which demonstrates the most important type of reaction. Therapeutic tests could also be helpful as long as one is able to choose selective methods. Since my patients, however, naturally want to be cured as quickly as possible, such methods have proved impracticable, and I have treated all infections for which positive evidence was present regardless of their possible importance for the pudendal lesion. By this method I have obtained most gratifying and often surprising results. The importance of treating secondary fusospirochetosis in any vulval granuloma, which has been stressed by Pund and Greenblatt, must be emphasized again on the basis of my experience.

TABLE 2.—*Local and Systemic Observations in Granulomas of Mixed Etiology*

| Case | Race | Age | Smear, Dark Field, Culture, Animal Inoculation, Biopsy | Wassermann | Frei | Dmelcos | Diagnosis |
|---|---|---|---|---|---|---|---|
| 1 | N | 18 | Hypertrophy of labia and clitoris; smear negative for spirochetes; biopsy typical for venereal lymphogranuloma | Pos. | Pos. | Pos. | Venereal lymphogranuloma of vulva in syphilitic patient |
| 2 | N | 29 | Granulating ulcer on labia; smear positive for Donovan bodies; biopsy typical of lymphogranuloma | Neg. | Pos. | Neg. | Acute inguinal granuloma superimposed on venereal lymphogranuloma |
| 3 | N | 21 | Granulating tumor; smear positive for spirochetes; biopsy typical of secondary syphilis | Pos. | Pos. | Neg. | Condyloma latum (syphilitic) in patient with old venereal lymphogranuloma |
| 4 | W | 38 | Deep ulcer in fourchet; smear positive for Vincent's organisms; no biopsy | Neg. | Neg. | Pos. | Chancroid with superimposed fusospirochetosis |
| 5 | N | 29 | Serpiginous deep ulcer of perineum; smear positive for Donovan bodies and numerous spirochetal organisms; no biopsy | Pos. | Pos. | Neg. | Inguinal granuloma and fusospirochetosis in patient with syphilis and venereal lymphogranuloma |
| 6 | N | 46 | Marked hypertrophy of labia with ulceration; smear negative; biopsy typical for lymphogranuloma | Pos. | Pos. | Neg. | Venereal lymphogranuloma in patient with syphilis |
| 7 | N | 17 | Serpiginous deep ulcer; smear positive for Vincent's organisms; biopsy showed Donovan bodies in tissue | Neg. | Neg. | Neg. | Inguinal granuloma with superimposed fusospirochetosis |
| 8 | N | 25 | Granulating ulcer on vulva; smear positive for Ducrey bacillus; biopsy, nonspecific | Neg. | Pos. | Neg. | Acute chancroid in patient with old venereal lymphogranuloma |
| 9 | W | 32 | Large necrotic ulcer on labia; smear positive for Vincent's organisms; biopsy, marked necrosis | Pos. | Neg. | Pos. | Chancroid with fusospirochetosis in syphilitic patient |
| 10 | N | 24 | Hypertrophy of labia with acute inflammation and numerous pustules; smear, hemolytic streptococcus; no biopsy | Neg. | Pos. | Neg. | Venereal lymphogranuloma with pyogenic infection |
| 11 | N | 22 | Large ulcerating granuloma of vulva; smear positive for Donovan bodies; biopsy, suggestion of syphilitic infection | Pos. | Neg. | Neg. | Syphilid of vulva with superimposed inguinal granuloma |

18. Plass, E. D.; Hesseltine, H. C., and Borts, I. H.: Monilia Vulvovaginitis, Am. J. Obst. & Gynec. **21:** 320 (March) 1931.
19. Lipschütz, B.: Ulcus vulvae acutum, in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1927, vol. 2, p. 392.
20. Karnaky, K. J.: Gonorrheal Vulvovaginitis of Children, Arch. Pediat. **54:** 34 (Jan.) 1937.
21. D'Aunoy, Rigney, and von Haam, Emmerich: Granuloma Inguinale, Am. J. Trop. Med. **17:** 747 (Sept.) 1937.
22. von Haam, Emmerich, and Lafferty, Charles: The Etiology of Venereal Lesions, New Orleans M. & S. J. **89:** 683 (June) 1937.

Patient 5 responded to antimony and potassium tartrate treatment only after the fusospirochetosis was successfully treated with neoarsphenamine, which drug also was used against the latent syphilitic infection. In order not to obscure the clinical picture, I advise withholding any type of treatment except soaking of the lesion in warm saline solution until all laboratory tests have been completed and a final clinical diagnosis has been reached. This plan not only makes it possible to repeat certain tests in case of doubtful results but also proves the most economical method and in spite of the short delay of a few days promises the best results.

### SUMMARY AND CONCLUSIONS

The macroscopic and microscopic pictures of 155 cases of infectious granulomas of the vulva were observed in the laboratory for venereal diseases in New Orleans.

Because of the fundamental difference in diagnosis and therapeusis a subdivision of infectious granulomas into the groups of venereal and nonvenereal lesions is recommended.

The presence of several etiologic factors in one pudendal granuloma could be proved in eleven cases. Various tests for the correct diagnosis of granulomas of mixed etiology have been evaluated.

Proper treatment of a granuloma of the vulva should be deferred until a complete diagnosis of the lesion has been reached. This will be greatly facilitated by the liberal use of laboratory methods.

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# ATROPHY OF THE VULVA

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The vulva, or the external female genitalia, is under endocrine control and manifests secondary sex characteristics. At birth the labia, the prepuce and the clitoris may appear rather prominent, probably as a result of maternal endocrine stimulation. Similar evidence of estrogenic stimulation may be seen in the breasts and in the internal genitalia of the newborn. These changes disappear rapidly after birth. During infancy and childhood the labia minora and majora remain small, of tissue paper thinness and almost transparent (fig. 1). With the onset of puberty these structures begin to grow rapidly and gradually take on normal adult appearance. The labia minora develop as separate distinct structures, the labia majora become more rounded and fuller and stand out more prominently, and the preputial folds and the clitoris become sharply demarcated. The growth of labial and pubic hair in the typical feminine pattern completes the development of the normal adult vulvar appearance.

In the event of a failure of normal sex development as a result of pathologic change in the anterior lobe of the pituitary gland or in the ovaries, the vulvar structures may fail to develop, remaining in their prepubertal state. It is not uncommon to see this evidence of sexual immaturity in adult women with primary amenorrhea.

Following the termination of the active reproductive years, regression begins to take place in the vulvar structures. Slowly, over a period of years, these secondary sex characters become changed. The mons veneris becomes less prominent, the labia majora shrink and flatten out, largely as a result of a loss of subcutaneous fat, and the labia minora may completely disappear, remaining only as small rudimentary folds near the urethra. The distribution of hair becomes more and more sparse (fig. 2). During the early years of the menopause these atrophic changes may be barely visible, but they become more marked with advancing age. The skin over the vulva becomes thin, shiny and occasionally parchment-like in consistency. The normal elasticity is lost, which results in an increasing narrowing of the vulvar orifice of the vagina. These physiologic atrophic changes of themselves produce no untoward symptoms but predispose to pathologic conditions.

The vulva, therefore, is under ovarian influence, and its normal state must be dependent on normal endocrine activity. It does not have the same embryologic origin as do the fallopian tubes, the uterus and the upper part of the vagina, but its normal and pathologic states are subject to endocrine activity. Phylogenically, the vulva in woman may have the same relationship to the reproductive organs as the sex skin of the higher apes.

The natural or the artificially induced climacteric initiates atrophic changes in the vulvar structures. The rapidity of development of these regressive changes is usually slower than those which involve the upper part of the vagina, the uterus and the tubes, but they are continuous year by year. The physiologic changes do not lead directly to abnormal symptoms or discomfort. However, they predispose to the development of pathologic conditions which give rise to clinical entities that demand attention.

Rapid and premature atrophic changes in the vulvar structures, particularly when these occur in young women as a result of an artificially induced climacteric, may result in serious narrowing of the orifice of the vagina and thereby lead to dyspareunia. Vaginal stenosis is a rather common sequel of radiation therapy in the treatment of carcinoma of the reproductive organs. The condition often involves women in their late thirties and early forties, when sex life is still an important factor. In these women the vulvar atrophy has a twofold origin, in the artificial menopause as well as in the direct action of the radiation to the tissues. The accompanying illustrations show the character of these changes (figs. 3, 4, 5, 6 and 7). The superficial epithelium shows the usual atrophy. There is present a marked deposition of collagenous substance in the subepithelial tissues. The blood vessel lumens are small and often completely obliterated, the vessel walls are thickened, and the elastic and muscular fibers have been largely replaced by hyalin. These vascular changes decrease the blood supply and hasten the atrophic changes.

### PATHOLOGIC CONDITIONS OF THE VULVA

The physiologic atrophy of the vulvar structures predisposes to pathologic conditions. The atrophic skin is easily bruised as a result of minor trauma, coitus or irritating and infectious contacts. Repeated trauma leads to minute cracks and fissures, which easily become infected by various organisms. Soon a mild infection

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of the skin and subcutaneous tissue is present. It is this infection that causes the symptom of itching. Constant itching leads to scratching, with more trauma to the delicate cutaneous surfaces. This process continued over a period of months or years may lead to the onset of chronic atrophic dermatitis of the vulva.

Three distinct stages have been described in this disease. In the initial stage the inflammatory symptoms predominate (fig. 8). The entire vulva is swollen, red, bruised and painful. The various structures stand out distinctly as a result of the edema. This may be so marked that blebs may form superficially. Petechial hemorrhages produced by the scratching give a mottled appearance to the skin. The structures are painful to the touch, and a vaginal examination may provoke pain and increase the hemorrhagic extravasation into the tissues. The patient complains of pain and of the intense itching, which may continue day and night. This acute inflammatory condition may last several weeks, months or even longer, but sooner or later it tends to subside and become subacute or chronic.

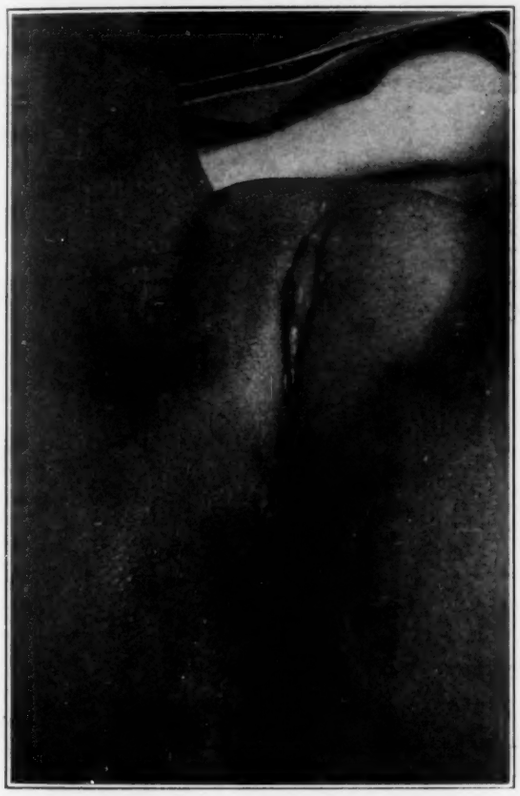

Fig. 1.—The vulva of a child 6 years old.

The second stage is chiefly characterized by the onset of atrophic changes (fig. 9). The skin of the vulva becomes indurated and thickened owing to increased thickness of the keratin layer. The usual elasticity disappears. The color may be a mottled gray with numerous reddish to pink areas where petechial hemorrhages are being absorbed slowly. The atrophy is best seen in the region of the clitoris, where the preputial folds flatten out and the clitoris gradually disappears under the atrophic hood.

The entire process is definitely limited to the nonhairy portion of the vulva. It is sharply demarcated at the mucocutaneous junction with the vagina. In its progress it may extend posteriorly to involve the perineum and the skin posterior to the anus. It has no tendency to spread laterally. The limited area involved in chronic atrophic dermatitis of the vulva bears out the endocrine origin of the atrophy.

The final stage of the disease is the chronic stage, lasting years (fig. 10). Slowly the skin over the entire vulva becomes smooth, glistening, semitranslucent and parchment-like. Its sharp demarcation from the adjoining skin is striking. The preputial folds and clitoris have completely disappeared. The labia minora and majora have flattened out and have disappeared as structures. They may still be identified near the urethra. The vaginal orifice is narrowed, and gentle examination causes the skin to crack and superficial

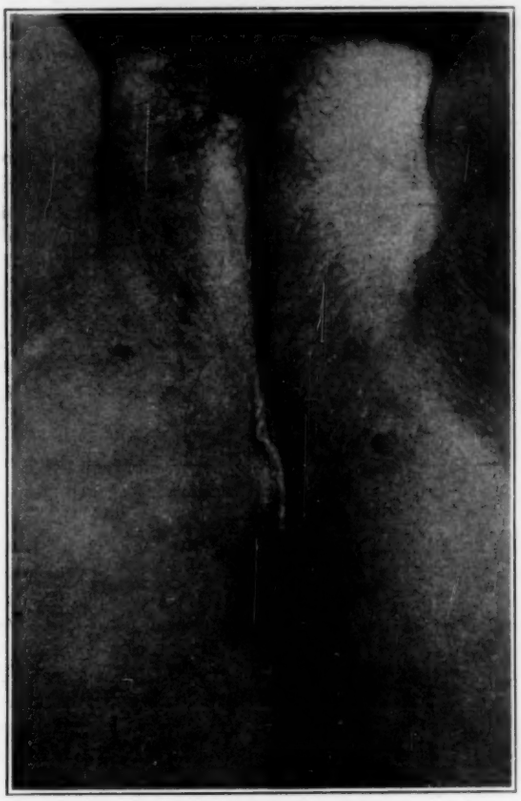

Fig. 2.—The vulva of a woman 57 years old, seven years after the onset of the menopause.

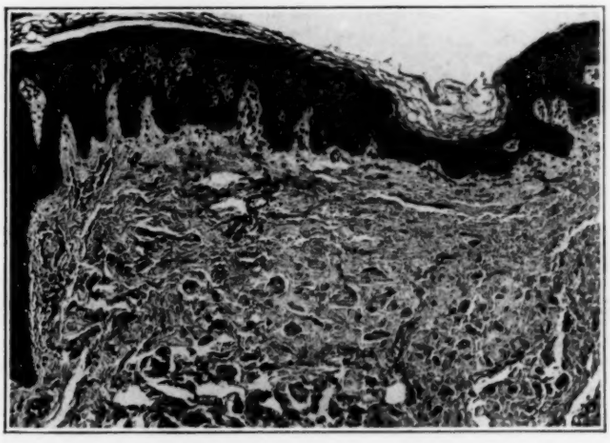

Fig. 3.—A section of the vulva of a woman eleven years after the onset of a natural menopause. There is an increased thickness of the keratohyaline layer. The papillae still are rather prominent.

petechiae to develop. Trauma or simple contact of any kind with the vulva may cause petechiae to form.

It may be difficult to place the process in each patient in the proper stage, for there may be a considerable variation in the same person. The disease is progressive and slowly passes through transitory stages.

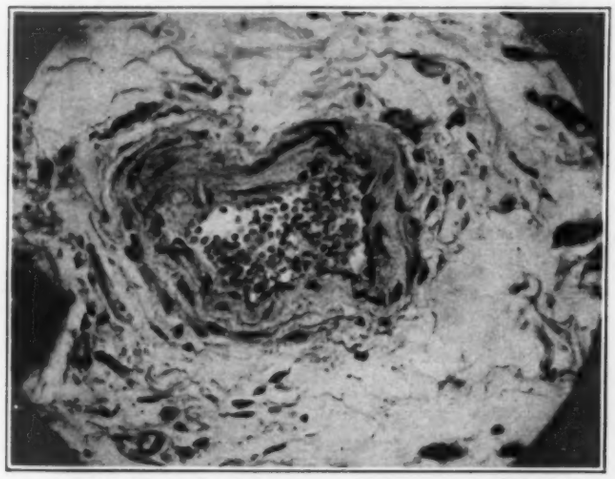

Fig. 5.—A vessel in the subepithelial tissues showing vascular changes.

An acute infection may be superimposed on the chronic stage, altering the typical picture. Patients are rarely observed over a long enough period for one to note the continuous retrogressive processes of this condition. Leukoplakic areas may develop anywhere on the vulva, particularly about the clitoris. These discrete whitish or grayish white plaques have given rise to the names leukoplakic vulvitis (Taussig [1]) and leukokraurosis (Graves [2]) for this condition.

### CLINICAL COURSE

Pruritus is the symptom which ultimately brings the patient to the physician. This discomfort is limited to the area of the vulva involved by the disease. At first the itching may be intermittent but it soon becomes

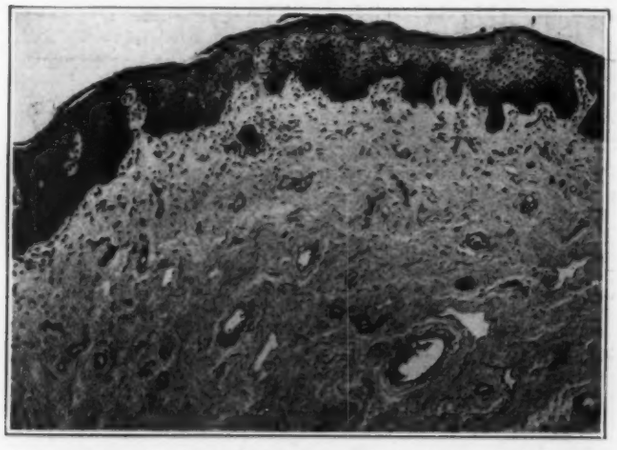

Fig. 6.—A section of the vulva of a woman in whom an artificial menopause was induced by irradiation seven years previously.

constant. It does not respond to the usual antipruritic lotions. It may keep the patient awake night after night until mental and physical exhaustion develops.

In a few instances burning rather than itching is the most common complaint. During the acute inflammatory stage the structures may be painful to the touch or to the clothing which comes in contact with the vulva. This tenderness disappears with the subsidence of the inflammation. During the onset of this condition dysuria may likewise be present. This symptom is the result of a mild inflammation of the external urethral orifice.

The progress of the disease is slow, often lasting several years and longer. There may be periods of remission during which the pruritus subsides. Usually this condition progresses until measures are instituted for its relief.

Fig. 8 (K. M.).—The early stage of chronic atrophic dermatitis of the vulva. The structures are swollen, red, bruised and painful. Numerous petechial hemorrhages are present.

### DIAGNOSIS

The typical case of chronic atrophic dermatitis of the vulva need present no diagnostic problem. The vulva should be examined by subdued or indirect light to throw into relief the sharply circumscribed atrophic whitish area of skin. The characteristic distribution, its sharp demarcation and the typical appearance, especially of the prepuce and clitoris, are sufficient to establish a diagnosis.

During the initial acute inflammatory stage of this disease it may be necessary to rule out other conditions which are associated with itching of the vulva.

Yeast vulvitis is one of the most common infections which cause pruritus of the vulva. This condition is often associated with diabetes, so that urinalysis and a blood sugar determination will be of diagnostic importance. This infection involves the hairy portions of the vulva and tends to spread to the groins and down over the perineum. The surfaces involved are likely to be moist and inflamed, with considerable superficial macer-

1. Taussig, F. J.: Am. J. Obst. & Gynec. **18**: 472-503 (Oct.) 1929; Atrophic Diseases of the Vulva, in Curtis, A. H.: Obstetrics and Gynecology, Philadelphia, W. B. Saunders Company, 1933, vol. 3, p. 623; Am. J. Obst. & Gynec. **31**: 746-754 (May) 1936.

2. Graves, W. P., and Smith G. V.: Kraurosis Vulvae, J. A. M. A. **92**: 1244-1252 (April 13) 1929.

ation of epithelium. Inoculation of scrapings from the surface epithelium will result in a growth of monilia on Sabouraud's medium.

Fungous infections are occasionally seen in the groins of women who complain of pruritus. These organisms rarely involve the vulva directly. The typical appearance of the lesion, the asymmetrical distribution and microscopic examination of superficial scrapings will establish the diagnosis.

Parasites such as pediculi or pinworms may likewise produce itching of the vulva. Close inspection of the vulvar hair and cutaneous surfaces will usually reveal these organisms.

Neurodermatitis is a neurogenic lesion of the skin often associated with pruritus. It rarely involves the vulva, but when it does it is a part of a more generalized distribution of the lesions. It is found in nervous and unstable individuals. The cutaneous lesion is not characteristic in appearance.

Fig. 9 (M. B.).—The second stage characteristics of chronic atrophic dermatitis of the vulva predominate. The skin is indurated, thickened and leathery. The labial structures have almost disappeared. The preputial folds are still somewhat swollen and prominent. Note the sharp demarcation of the involved area at the hair line and its extension over the perineum to the anal margin.

Carcinoma of the vulva may occur at any stage of chronic atrophic dermatitis of the vulva (fig. 11). It has been suggested that leukoplakic areas predispose to the development of malignant tumors. The atrophy of the vulvar skin and the presence of chronic irritation in the form of infection certainly predispose to the development of an epithelioma. In the early stages of the neoplasm one can easily recognize the chronic atrophic dermatitis. This complication is the most serious feature of the disease and thoroughly justifies the eradication of all possible sources of irritation.

*Treatment.*—The therapeutic care of chronic atrophic dermatitis of the vulva has changed little in recent years. The likelihood that a carcinoma will develop in this abnormal locality can be prevented only by the removal of the chronically inflamed tissue which predisposes to malignant change. Surgical removal of the vulva remains the most satisfactory treatment for patients who have marked evidences of the disease. The results of surgical intervention are excellent (figs. 12, 13 and 14). The patients are usually elderly women for whom

Fig. 10 (A. A.).—In this case atrophic manifestations are most marked. Labial structures have entirely disappeared. The clitoris can just be seen and it will ultimately disappear. The skin is whitish, thin and glistening.

Fig. 11 (M. G.).—A small polypoid squamous cell carcinoma of six to eight weeks' duration superimposed on chronic atrophic dermatitis of the vulva.

marital relations are no longer important, so that possible introital stenosis need not be considered. The careful removal of the vulvar tissues and suitable reconstruction will leave a useful vagina when this is important. Vulvectomy carries little risk even in the old and debilitated, for it is a superficial removal of tissue and if necessary can be carried out with the area under local anesthesia.

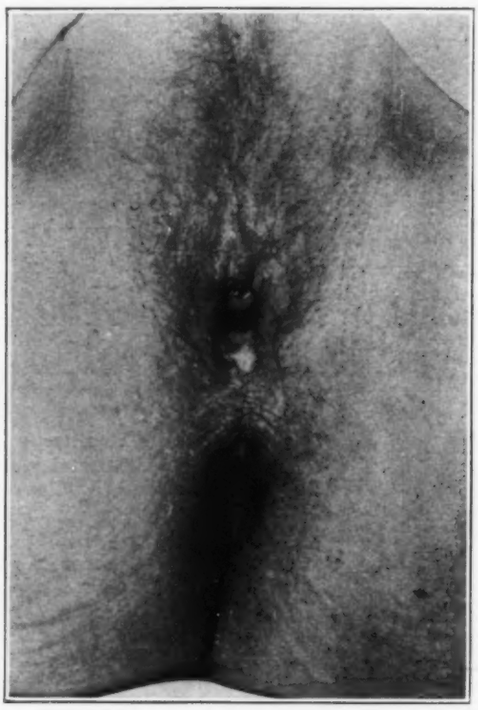

Fig. 13 (M. M.).—Postoperative result following vulvectomy performed two years previously. On examination the introitus easily admits two fingers, providing a functional vagina.

It is interesting to note that in our clinic palliative therapy has been given up in the last four years. No suitable local therapy has been found. It is not sufficient to allay the pruritus, but all sources of irritation should be removed. This can be accomplished only by a removal of the involved skin. If the lesion has extended around the anus to the posterior skin, it may be well to undertake the vulvectomy in two stages. During the first stage the vulvar skin proper can be removed. At a later date the skin posterior to the anus can be dissected away. Such a procedure may result in a smoother convalescence.

The operative procedure should take into consideration the blood supply to tissues. There should be no unusual pull on united skin edges, for these will become necrotic or heal poorly. Good mobilization of apposed surfaces will result in primary union. Rarely will any difficulty be encountered with the urethra, for a safe margin of normal mucosa is usually present.

Irradiation has been given up because it provided few, if any, cures. Occasionally temporary relief from the itching occurs, but the progressive cutaneous changes continue, and the danger of malignant disease still remains.

Endocrine therapy has gained in popularity in the last few years. Peters and Macbeth,[3] Tscherne,[4] Foss [5] and a few others reported small series of cases treated with estrogens with satisfactory results. The dosage and mode of administration varied considerably. To some patients estrogens were administered parenterally, and in a few cases they were given by inunction or as vaginal suppositories. The dose varied from several thousand international units to as much as 250,000 units. The direct local application of estrogens may have some merit in the light of a recent report by MacBryde [6] showing that the local effect of estrogens was more pronounced than the general effect.

Foss [7] recently reported a series of forty-eight cases adequately treated with estrogenic substance. His patients received estradiol benzoate by parenteral administration and locally in the form of an ointment and as suppositories. He started with 10 to 25 mg. doses and diminished the amount as the patients improved. The patients received vitamin A and hydrochloric acid in addition. He concluded that few of the patients received complete and lasting comfort and nearly all complained of slight relapses which could be brought under control by further endocrine therapy. The more severely affected patients required almost continuous endocrine therapy to maintain comfort.

In our first series of cases we [8] reported on the use of estrogenic therapy. Our conclusion was that it had little value in the treatment of chronic atrophic dermatitis of the vulva. Since this earlier report crystalline estrogens have become available, so that large doses can now be administered. The reports in the literature are not entirely convincing as to the efficacy of such treatment. It will require a careful evaluation in a large series of cases to determine whether estrogenic medication has a place in treatment. To be entirely satisfactory such medication must result in a disappearance of all evidences of irritation and much of the abnormal

Fig. 14 (M. M.).—Tissues removed at vulvectomy for chronic atrophic dermatitis of the vulva.

3. Peters, A. D. K., and Macbeth, A. N.: Proc. Roy. Soc. Med. **30**: 1330-1333 (Sept.) 1937.
4. Tscherne, Erich: Zentralbl. f. Gynäk. **62**: 169-172 (Jan. 15) 1938.
5. Foss, G. L.: J. Obst. & Gynaec. Brit. Emp. **43**: 1091-1113 (Dec.) 1936.
6. MacBryde, C. M.: Production of Breast Growth in Human Female, J. A. M. A. **112**: 1045-1049 (March 18) 1939.
7. Foss, G. L.: J. Obst. & Gynaec. Brit. Emp. **46**: 271-279 (April) 1939.
8. Adair, F. L., and Davis, M. Edward: Surg., Gynec. & Obst. **61**: 433-442 (Oct.) 1935.

cutaneous change. If this does not occur, the factors which predispose to the development of cancer of the vulva still remain.

Swift[9] found that patients with vulvar itching and atrophic changes of the skin were likely to manifest achlorhydria when the stomach content was analyzed. He collected a series of cases in which the achlorhydria was treated by diluted hydrochloric acid and vitamin A in the form of cod liver oil. He reported excellent results for the majority of the patients. They were relieved of their itching, and the vulva returned to a normal appearance in some cases. No histologic sec-

9. Swift, B. H.: J. Obst. & Gynaec. Brit. Emp. **43**: 1053-1077 (Dec.) 1936.

TABLE 1.—*Nonsurgical Therapy of Chronic Atrophy Dermatitis of the Vulva*

| Present Age | Age at Menopause | Symptoms | Areas Involved | Previous Treatment | Comment |
|---|---|---|---|---|---|
| 71 | 51 | Severe itching, redness, swelling of vulva, 1½ years | Labia minora and majora, perineum, vulva | Local therapy | Prior treatment gave no relief; no clinical treatment |
| 47 | 36 | Itching of perineum, 5 years | Labia minora and majora, vulva | Irradiation and local therapy | Irradiation gave temporary relief |
| 61 | 56 | Itching of vulva, 8 or 10 years | Labia minora and majora, vulva | Irradiation and local therapy | Irradiation gave temporary relief; vulvectomy suggested |
| 50 | 49 | Itching of vagina, 17 years | Labia minora and majora, perineum, vulva, fissures extending into anal ring | Irradiation and local therapy | Marked relief for 7 months but symptoms have returned recently |
| 40 | .. | Itching of labia, 5 or 6 years | Perineum extensively involved | Irradiation and local therapy | Irradiation gave relief for 1 month; aggravated symptoms returned; vulvectomy suggested |
| 57 | 47 | Severe itching of vagina and rectum, 10 years | Labia minora and majora, perineum, vulva | Local therapy | Medical therapy gave temporary relief; vulvectomy suggested |
| 42 | .. | Itching of labia minora, 4 years | Edema of vulva, perineum | Irradiation and local therapy | Irradiation gave no relief; vulvectomy advised |
| 53 | .. | Itching of vulva | Labia minora and majora, perineum, vulva | Local therapy | Treatment gave relief |
| 50 | .. | Itching, burning of vulva, discharge, pain, 2 years | Labia minora and majora, perineum, vulva | Local therapy | No treatment given; vulvectomy suggested |
| 60 | 35 | Itching about anus, profuse discharge, 20 years | Labia minora and majora, anus | Local therapy | Roentgen and local treatment advised |
| 60 | 53 | Itching of vulva, pain, discharge, dysuria | Vulva, perineum | Estrogen | Improved on treatment; symptoms returned after 2 years |
| 50 | 32 | Itching, discharge, dysuria, 2 years | Labia minora and majora, preputial folds | Irradiation and local therapy | Irradiation made condition worse and was discontinued; vulvectomy suggested |
| 40 | .. | Itching, discharge, dysuria, 1 year | Labia minora and majora, preputial folds, perineum | Estrogen | Treatment made condition worse; hypertrophic stage; no follow-up |
| 19 | .. | Itching of perineum, 12 years | Labia minora, vulva | Local therapy | Patient improved after treatment; did not return to clinic |

TABLE 2.—*Vulvectomy for Chronic Atrophic Dermatitis of the Vulva*

| Present Age | Age at Menopause | Symptoms | Areas Involved | Previous Treatment | Date of Operation | Comment |
|---|---|---|---|---|---|---|
| 62 | 47 | Vulvar itching, burning, 2 months | Labia minora and majora, perineum, vulva | Irradiation and local therapy | March 1931 | Irradiation gave no relief; results of vulvectomy excellent |
| 56 | 46 | Vulvar itching, burning, 3 months | Entire vulva, perineum | Irradiation and local therapy | July 1932 | Some relief following irradiation; results of vulvectomy excellent |
| 40 | .. | Vulvar itching, discharge, 9 years | Labia minora and majora, perineum, vulva | Irradiation and local therapy | Sept. 1933 | Irradiation aggravated symptoms; results of vulvectomy excellent |
| 59 | 49 | Vulvar itching, burning after roentgen therapy for carcinoma of cervix | Labia minora and majora, perineum, vulva | Local therapy | April 1934 | Good result; no complaints 5/17/38 |
| 48 | 47 | Vulvar itching, 2 years | Labia minora and majora, perineum, vulva | Local therapy | April 1934 | Treatment gave no relief; partial vulvectomy; no complaints 10/3/38 |
| 61 | 45 | General itching, burning, 2 years | Labia minora and majora, perineum, anus | Irradiation and local therapy | May 1934 | Good result; slight itching of anus still persisted 3/15/38 |
| 57 | 33 | Vulvar and anal itching, burning, 10 years | Vulva, perineum | Irradiation and local therapy | June 1934 | Good result; patient has not returned to clinic since 9/6/35 |
| 57 | 51 | Genital itching, severe irritation | Marked inflammation and edema of vulva | Irradiation and estrogen | Sept. 1934 | Irradiation given elsewhere; treatment gave no relief; operative result good |
| 63 | 50 | Vulvar itching, 15 years | Labia minora and majora, clitoris, perineum | None | Oct. 1934 | Good result except for slight itching about anus |
| 68 | 43 | Vulvar itching, 1 year | Labia minora, clitoris, perineum | None | Nov. 1934 | Excellent result |
| 36 | 36 | Vulvar itching, 4 months | Labia majora, perineum | None | March 1935 | Excellent result |
| 48 | 44 | Vulvar itching, 2 years | Labia minora | None | June 1935 | Excellent result |
| 50 | 33 | Vulvar itching, 14 months | Labia minora, clitoris, perineum | None | July 1936 | Excellent result |
| 50 | 48 | Vulvar itching, 10 years | Labia minora, prepuce, clitoris, perineum | Estrogen | Nov. 1935 | Good result; patient has not returned since 10/36 |
| 67 | 47 | Burning, smarting, itching of vulva | Labia minora, clitoris, perineum | None | Dec. 1935 | Excellent result |
| 63 | 51 | Itching of vagina, labia minora, anus, perineum, 10 years | Labia minora and majora | None | Dec. 1935 March 1936 | Good result, operation in two stages |
| 51 | 51 | Burning, itching of vagina, 5 months | Labia minora and majora, perineum | None | Feb. 1938 | Excellent result; no complaints |
| 64 | 63 | Vulvar itching, 6 months | Labia minora and majora, clitoris, perineum | None | Oct. 1938 | Excellent result |
| 47 | 47 | Vulvar itching, dysuria, 4 years | Labia minora and majora, clitoris, perineum | None | Feb. 1939 | Good result |

tions of the diseased skin were made. This simple therapy may be worth trying for patients whose predominant complaint is itching and whose skin is normal in appearance.

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## ABSTRACT OF DISCUSSION

### ON PAPERS OF DR. VON HAAM AND DRS. ADAIR, DAVIS AND SCHUITEMA

DR. FRED J. TAUSSIG, St. Louis: Dr. von Haam's analysis of the granulomas from a pathologic standpoint is important. I would stress his comment on the percentage of mixed infections. I have great difficulty in classifying these cases, particularly the group in which hypertrophy and ulceration have been pronounced. I believe that the important underlying etiologic factors in these cases are race, sexual habits and uncleanliness. The paper by Drs. Adair, Davis and Schuitema brings out certain facts regarding the primary atrophy preceding the cases of leukoplakic change. This corresponded to my examination made in the city infirmaries of a large group of women who had no symptoms. Many cases similar to these occur without symptoms, but when the itching becomes persistent and pronounced one finds the typical leukoplakic change. In 50 per cent of our carcinomas of the vulva previous leukoplakic vulvitis had been present. I feel that in carcinoma of the vulva one can do fine work in preventive medicine by removing these leukoplakic vulvas. The cases in which carcinoma develops on such a leukoplakic basis are relatively benign compared to those in which a carcinoma develops from a papilloma or from a syphilitic ulcerative process. In the group developing from a leukoplakia it is found that if a radical operation is done, including the Bassett dissection bilaterally, going into the inguinal canal, the percentage of cures runs as high as 64 in our series. The importance, therefore, of not neglecting these cases, of not considering them hopeless even though the ulcerative process locally may be quite advanced, is great. I feel that one should operate in every case that is in any sense curable by surgery. Irradiation has proved in my hands, as it has at the University of Michigan, an absolute failure.

DR. EMIL NOVAK, Baltimore: In the paper of Drs. Adair, Davis and Schuitema reference is made to the fact that the ovarian estrogenic hormone exerts an influence on the vulva as well as on the genital tract. There is, however, no such cyclic change in the vulva as there is, for example, in the uterus, so that the vulva could scarcely be compared to the sexual skin of monkeys, in which such striking cyclic changes are noted. On the other hand, as Dr. Adair pointed out, the development and maintenance of the vulvar structures are under the direct control of the estrogenic ovarian hormone. The normal prototype of kraurosis is the moderate shrinkage and atrophy which normally takes place at the menopause. In some women, however, this atrophic shrinkage is so extreme in both vulva and vagina as to make coitus impossible, and on this purely kraurotic condition a leukoplakic vulvitis may be superimposed, probably as a result of secondary infectious processes. This, however, is not by any means the only sequence of events. I have seen extreme cases of chronic atrophic vulvitis with leukoplakia in women still in the reproductive epoch, with entirely normal menstruation. I saw such a condition in a patient of 28, whose trouble began at the age of 7. I mention this to emphasize that the influence of hormones in most of these cases is a very doubtful one, so that the generally unsatisfactory results of endocrine treatment need not be wondered at. Dr. von Haam's study of vulvar granulomas is valuable. His survey includes a number of lesions which ordinarily would be classified as ulcerations or chronic inflammation, in which granulation tissue is of course commonly present, though not in the circumscribed masses to which the term granuloma would ordinarily be limited. Such serologic, bacteriologic and biopsy studies as he has made have done much to clear up difficulties in the diagnosis of vulvar lesions. For example, the term esthiomene was formerly a dumping ground in the diagnosis of the ulcerative lesions, embracing all forms in which the etiology was obscure. Now it seems justifiable to limit the term, as Dr. von Haam has done, to the ulcerative lesion which may form such a troubelsome feature of advanced lymphopathia venereum.

DR. E. D. PLASS, Iowa City: I desire to complement the exposition of vulvar lesions by showing illustrations from my own experience. The first patient, 18 years old, a primigravida, complained of a painful tumor of the left labium. The mass was first noted at the age of 8 and had gradually increased in size. The home physician had drained the cyst but an abscess developed. This abscess was drained and subsequently the cyst was removed. It proved to be an epithelial inclusion cyst. The second patient, 17 years old, was a primigravida at term who complained of edematous swelling of the vulva for four days prior to admission. On admission the blood pressure was 150 systolic, 100 diastolic. There was marked edema of the legs and thighs. The patient was unable to void, and catheterization was effected with difficulty. The day after admission the patient started into labor and was delivered by low cervical cesarean section. Twelve days later there was no evidence of the edema. The next patient, a 24 year old quintigravida, developed bilateral masses on the labia minora three or four days after delivery. The history revealed that after the previous deliveries there had been similar painful swellings of the labia which had regressed within a few days, suggesting accessory breast tissue. The tumors were removed and showed breast tissue. After operation the vulva returned practically to normal. The next patient, a 54 year old multipara, complained of a painless tumor on the left vulva of six years' duration. This tumor was excised under local anesthesia and proved to be a lipoma. A 34 year old septigravida, and eight lunar months pregnant, complained of a mass involving the vulva. This mass had developed following a fall during which she hit the vulva on a chair. An obvious diagnosis of hematoma of the vulva was made. The hematoma was incised, the contents were evacuated and the bleeding points were ligated. On the following day she delivered spontaneously premature stillborn twins. The convalescence was uneventful. A 39 year old multigravida was admitted for treatment of a large fibroid of the uterus. A small cyst was detected in the left labium minus and was removed completely. It was a cystadenoma of the sweat glands.

DR. RITA S. FINKLER, Newark, N. J.: In simple senile vulvovaginitis not complicated by extensive leukoplakia or kraurosis vulvae, good results have been obtained by the use of estrogenic therapy. Since the publication of Dr. Davis's work on the beneficial results obtained with the use of estrogenic therapy in senile vulvovaginitis I have treated fifty-one patients presenting symptoms of senile vulvovaginitis in the last two years. Dr. Davis used estrogens chiefly by the intramuscular route and not only did all the patients respond with relief from the symptoms complained of, but a restoration of the vaginal epithelium from a senile type to the type present during active sex life was noted. In my patients especial emphasis has been laid on inunction and oral therapy. Of fifty-one patients, twenty-one were treated by estrogenic inunctions into the affected area, sixteen by concentrated estrogenic preparations administered orally, ten by intramuscular injections and four by the use of estrogenic vaginal suppositories. All patients were studied by means of vaginal smears and vaginal biopsies. Multiple vaginal biopsies were taken before, during and after the completion of the therapy. Biopsies were also taken during the periods of control therapy, which consisted of placebo tablets and bland and analgesic ointments. In most of the cases the oral and inunction therapy compared favorably with the method of intramuscular injections, provided a sufficient concentration of estrogens was used. The estrogenic ointment (estradiol-progynon D-H ointment) was applied locally to the affected area; the oral preparations consisted of estradiol 1,800 oral units daily, emmenin (estriol glucuronide) from 4,000 to 6,000 oral units daily, and stilbestrol given in capsules, 1 mg. doses three times a day (about 7,500 units daily). There is evidence of systemic absorption from the use of estrogenic ointment; this was apparent in one of the cases in which an episode of uterine bleeding occurred ten years after the menopause. During the administration of oral preparations there was a marked relief from menopausal symptoms besides the

improvement in the senile vulvovaginitis. On the whole, estrogenic therapy administered either by inunction, by the oral route or by intramuscular injection has its place in the treatment of selected cases of senile vulvovaginitis.

DR. FRED L. ADAIR, Chicago: I think that no controversial points of importance have been raised in connection with the discussion, so I will devote the few moments I have to treatment of these atrophic conditions. I think, in general, that when no symptoms arise from these atrophic conditions little if any treatment is needed. Many of the symptoms are due to complicating or secondary conditions, such as pyogenic infections, diabetes, irritating vaginal discharges or mycotic infections, and every effort should be made to clear up the secondary complicating conditions before attempting any more radical procedures. In our hands, at least, any attempt at anything other has met with little success. Various things have been tried by us in the way of local applications, lotions and so on, radiation therapy, and to a certain extent endocrine therapy. There are reports in the literature in which estrogenic substances in particular have been administered hypodermically, orally and locally. While some alleviations of symptoms has been obtained by certain of these methods, I think it is fair to say that no permanent cure or arrest of the condition has been accomplished by them. That does not mean that we should not attempt to continue the use of these and to try to find out something that might be efficacious. However, I think that at present the only treatment which we really have is the treatment of the secondary conditions and surgery with vulvectomy, which is indicated from two points of view: first alleviation of the symptoms and second the prevention of chronic irritation, which may lead to a subsequent malignant condition. We can regard the vulvectomy not only as an alleviative measure, at least arresting the condition, but also as a prophylactic measure for the possible development of carcinoma.

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# CARE OF TRAUMATIC INJURIES OF THE MALE URETHRA

WILLIAM R. HORNADAY, M.D.
DES MOINES, IOWA

When all etiologic factors are considered, urethral injuries in the male occur not infrequently. In the evolution of man to the two-footed and upright position, he has acquired an increased hazard to certain accidental injuries. Among these are injuries to the lower part of the abdomen, the pelvis and the lower extremities. Experiences recorded by observers in all parts of the world reveal a wide diversity of means by which accidental injuries to the urethra may be acquired. By far the most frequent cause is a fall from an elevated position in which the entire body weight is transmitted with a sudden impact to a localized point of the perineum. Perhaps the second most common cause involves crushing injuries in which the body is caught or impinged beneath a falling object. Injuries incurred in the latter type of accident are invariably complicated by fractures of the pelvic girdle. In my experience such injuries often occur in automobile accidents and in mine casualties in which the miner is pinned under a fall of coal. There is a noticeable geographic as well as an occupational element noted in the origin of many urethral injuries. According to Peacock and Hain,[1] the lumberman of the Northwest is a frequent victim. Such injuries are also prevalent among the boatmen of China, as noted by Crawford.[2] O'Conor[3] reported frequent instances of injuries incurred from falling through a partly opened manhole in the more densely populated areas of our larger cities. In time of war, wounds from shrapnel and bullets, as well as bayonet deflections, are important factors in urethral injuries.

During the past quarter of a century, since Nitze's development of the cystoscope, a widely increased practice of urethral instrumentation has developed and, by gradual stages, become the high art it now is, as exemplified in various forms of transurethral surgery. Undoubtedly, the tolerance of the urethral orifice should rank high in comparison with that of other apertures of the body when the frequency of the introduction of tools from the exterior is considered. This ability of the urethral canal with its complex system of glandular network to withstand instrumentation in the absence of a disease process and manifest little or no after-effect is a source for wonder. The reverse is equally true, and often there is a violent reaction when slight instrumental injury is incurred in the presence of acute or chronic inflammatory disease, especially when it is associated with partial obstruction to the urinary flow. An illustration of this fact was recently observed:

A man aged 21 reported to his family physician on account of difficulty in emptying the bladder. He gave a history of long-standing pyuria and denied having had a syphilitic infection. Examination revealed a pinpoint opening of the meatus with multiple strictures of the penile urethra. A meatotomy was performed. In repeated attempts to dilate the urethral scar a small puncture wound was incurred in the urethral wall about 10 cm. back of the external opening. The accident was recognized at the time, and drainage by the use of a small indwelling catheter was established for two days. Shortly after its removal, localized edema was noted. Several attempts at catheterization met with failure. Progressive ecchymosis ensued rather promptly, with discoloration of the entire penile structure and subsequent extension to the tissues of the scrotum, following closely the line of Colles' fascia, upward and over the lower pubic area of the abdominal wall. In order to halt the process and reestablish functional drainage, suprapubic cystostomy was performed. Numerous incisions were necessary to drain the tissues of extravasated fluid. The patient is now in the midst of severe septicemia, with the outcome shadowed in doubt.

It is a rather common experience, when foreign bodies lodge in the urethral canal, to encounter difficulty in their removal by way of the anterior urethra. The question should always be uppermost: Will less scar tissue result from an external urethrotomy to remove the foreign body than from persistent efforts to extract it by urethral instrumentation? The same query is raised when an abnormally small urethral canal (under 24 French, generally regarded as of normal size) is called on to receive tools of larger caliber (from 26 to 30 French), such as are now employed in various forms of transurethral surgery. Examples are the resectoscope and the modern lithotrite, provided with constant vision. Because of the tension placed on the urethral canal under such circumstances, either perineal section or suprapubic cystostomy should be favorably considered. On reflection, a number of instances may be recalled in which either the suprapubic or the perineal route would have been preferable.

## URETHRAL INJURY OF EXTERNAL ORIGIN

In making a detailed study of fourteen selected cases during the past five years, the resulting experiences have, in the main, corroborated others of preceding record. It is recognized that this number is not large, but it is sufficient to afford added information and possibly to extend our knowledge a little with respect to future management of this type of accidental dis-

Read before the Section on Urology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Peacock, A. N., and Hain, R. T.: Injuries of the Urethra and Bladder, J. Urol. **15**: 563-582 (June) 1926.
2. Crawford, F. R.: Care of Cases of Traumatic Rupture of Male Urethra, Virginia M. Monthly **59**: 670-672 (Feb.) 1933.
3. O'Conor, V. J.: Repair of Rupture of the Male Urethra, Surg., Gynec. & Obst. **63**: 198-200 (Aug.) 1936.

ability. In this series I have noted a large number of incomplete tears of the anterior urethra as compared with the more serious rupture of that portion of the urethral canal posterior to the triangular ligament. Injuries of the urethral canal above this important anatomic landmark of the perineum are invariably in the nature of complete division of segments, which often are not in apposition. Usually the urethral lesion is acquired by multiple fractures of the bony pelvis with displacement. Associated with this there is frequently a tear of the bladder wall with resultant extravasation.

It should be emphasized that the accidentally acquired lesion of the lower part of the urinary tract may be but a part of a general picture involving vital injuries of the intestine or other important viscera, and attention to these structures is of equal importance. Thus the friendly and cooperative hand of the abdominal surgeon is always appreciated.

I have found that it is exceedingly difficult to classify urethral injuries into definite groups, although in a general way one should recognize the site of the injury as being either anterior or posterior to the superior or deep layer of the urogenital diaphragm. Suggestive signs elicited by external superficial examination, together with knowledge of the accident and associated details, will usually provide a positive clue as to whether the rupture is complete or incomplete. Within a few hours, and often much earlier, evidence of fluid extravasation may become apparent. This may be manifest in the lower part of the abdomen and pubic area, or rectal examination may reveal escaping fluid above the level of the superior layer of the triangular ligament and in the retrovesical space. Again, visible evidence may be found in discolored swelling of the external surface of the perineum when the ischiorectal fossae, situated posteriorly to the two layers of the triangular ligament, are involved by leakage due to incomplete rupture at this point of the urethra.

A tabulated list of signs or symptoms may not apply to any particular patient. As emphasized by Young[4] and others, if a patient is seen soon after an accident, superficial symptoms of minor character may mask a more severe lesion, deeply placed, which will soon be manifest by evidence of approaching shock. An example of this was seen in case 6. After an automobile accident, the patient suffered a complete tear of the posterior urethra and a large rupture in the bladder wall with intraperitoneal extravasation. For personal reasons this patient desired to be transferred from one hospital to another, and this was accomplished before complete physical collapse ensued about two and one-half hours after the accident.

*Survey of Clinical Material*

| Case | Nature of Accident | Type of Injury | Catheterization | Meatal Hemorrhage | Infection (Prior) | Urinary Retention | Shock | Care |
|---|---|---|---|---|---|---|---|---|
| 1 | Blow from upturned rake in field | Incomplete rupture membranous urethra | No | Profuse | No | Yes | No | Perineal section |
| 2 | Automobile | Pelvic fracture, complete rupture posterior urethra | No | Slight | No | Extravasation, extraperitoneal | Yes | Suprapubic cystostomy |
| 3 | Fall from saddle | Pelvic fracture, complete rupture posterior urethra | No | Slight | No | Extravasation, prevesical space | Profound | Suprapubic, later urethral |
| 4 | Fall astride baggage | Bulbomembranous urethra | No | Profuse | No | Yes | Slight | Filiform catheter technic |
| 5 | Pinned under falling ledge of coal | Pelvic fracture posterior urethra, intact bladder | No | Moderate | No | Yes | Moderate | Suprapubic cystostomy |
| 6 | Automobile | Pelvic fracture posterior urethra | No | Moderate | No | Extravasation, intraperitoneal and extraperitoneal | Profound | Suprapubic, later urethral |
| 7 | Fall on rung of ladder | Membranous urethra | No | Profuse | No | Yes | No | Suprapubic cystostomy, secondary infection |
| 8 | Fall down grain elevator shaft | Membranous urethra | Yes | Profuse | Yes | Yes | No | Perineal section, catheter over filiform |
| 9 | Fall over chair | Bulbomembranous urethra | Yes | Slight | No | No | No | Normal drainage |
| 10 | Pinned back of automobile | Pelvic fracture, bladder rupture posterior urethra | No | Slight | No | Extravasation, prevesical and retrovesical space | Severe | Suprapubic cystostomy |
| 11 | Straddle fall on sideboard of wagon | Bulbomembranous urethra | No | Profuse | No | Yes | No | Perineal section, urethral catheter only |
| 12 | Caught between side of building and truck | Pelvic fracture | No | Moderate | No | Yes | Moderate | Early perineal section |
| 13 | Instrumentation | Penile urethra | Yes | Moderate | Yes | Yes | No | Suprapubic cystostomy, multiple drainage incisions |
| 14 | Fall astride loose manhole cover | Membranous urethra | No | Moderate | No | Yes | No | Perineal section, urethral catheter |

The influence of the fascial planes in the presence of injury is of importance provided the fascial sheath itself is not involved in the lesion, thus interfering with the property of tissue localization. A bullet or stab wound may produce an injury of the urethra similar to the so-called straddle blow on the perineum, yet the flow of the extravasated fluid may be in an opposite direction. Urethral hemorrhage plus urinary retention may be present in some instances in addition to other signs of the injury. It is obvious that the fascial planes offer little or no effect on tissue drainage in patients who have multiple or comminuted fractures with displacement of the bones of the pelvis. In two of four patients having fractures of the pelvis there were numerous rents in the bladder wall as well as a complete rupture of the prostatomembranous urethra. Under such circumstances, the fluid of extravasation is found within the dependent portion of the abdominal cavity with the resulting clinical picture of peritoneal invasion.

4. Young, H. H.: Treatment of Complete Rupture of Posterior Urethra, Recent or Ancient, by Anastomosis, J. Urol. **21**: 417 (April) 1929.

Some degree of confusion persists with respect to the fascial structures of the pelvis and the perineum and the role played by the different fasciae in the presence of escaping fluid from the urinary tract. This was well explained by Wesson [5] in an excellent treatise in 1923. There is a lack of unanimity of view between the anatomist and the surgeon with respect to anatomic terms, particularly with reference to Denonvilliers' fascia and the double layer of the urogenital diaphragm. There is also some complexity of relationship between Buck's and Colles' fasciae, both of which were originally recognized by surgeons. Tissue behavior in the presence of cellular activity, as witnessed on the operating table, is dissimilar to that viewed in the dissecting room. Then, too, there seems to be some disagreement among surgeons themselves concerning the interpretation of clinical facts as presented in cases of urethral injuries with subsequent extravasation. This applies to the presence of hematomas and the accumulation of urine in the subcutaneous tissues external to the bladder and urethra and their restrictions by the presence of the various fascial planes.

### MEASURES IN TREATMENT

The first prerequsite in the care of accidental injuries of the urethra is to determine the manner in which the injury was received. Early and accurate interpretation of the location of the injury is absolutely essential. The general physical status, the amount and degree of hemorrhage, trauma of other important viscera which react on the general physical state of the patient and the varying degrees of shock form the clinical picture which, in its entirety, governs the measures in preliminary care.

X-ray studies are invaluable and should be utilized when at all available. Even when fractures seem improbable, the return to normal position of displaced fragments of an unsuspected fracture, or a spicule of bone, offers valuable information concerning the location of the urethral tear. The cystogram is of doubtful value and, if pursued by the retrograde route, invariably affords an increased element of hazard. It is obvious that in all cases of urethral injury, even though the injury may appear to be rather inconsequential, the patient should be hospitalized whenever circumstances permit him to be moved. Close and constant observation of this type of injury will, at times, aid in the detection of early and slowly developing pockets of extravasation.

The use of the indwelling urethral catheter should be attempted only after it has been determined that the rupture is not complete and is distal to the deep layer of the urogenital diaphragm. In most other situations, the use of the urethral catheter should be discouraged, as the danger is increased manyfold by unwise attempts to relieve urinary retention by this method. There is additional danger in its coincident employment with the irrigating urethral syringe. It frequently happens that the catheter fails to drain, and, in order to test the patency of the catheter, fluid is injected with the hope that it will reach an intact bladder and then promptly return. The patient complains of pain in one of the ischiorectal fossae or increased distress in the lower part of the abdomen, the result of increasing extravasation. In addition there is the danger of superimposed infection.

When it has been obviously demonstrated by the clinical picture that drainage by urethral catheter is indicated, one may proceed, under strictly aseptic precautions, to employ the modified flexible filiform. When handled carefully, the filiform will often pass successfully through the urethra by the traumatized area and into the bladder. The filiform, with the detachable catheter, is then partially withdrawn, and a soft rubber catheter (from 16 to 18 French) is passed and adjusted over the filiform, which is still in place. The catheter is then slid over the filiform and into the bladder. The filiform is removed and the catheter anchored in position for continuous drainage over a period of from ten to twelve days. I prefer the use of catheters of smaller size (from 16 to 20 French) to those of larger size (from 22 to 26 French), as was my former custom, because of the danger of rolling back the proximal fragment of the severed urethra with resultant displacement of the ends, which interferes greatly with this maneuver. In addition, the smaller catheter facilitates free drainage between the surface of the catheter and the urethral mucosa and makes the patient more comfortable. It should be stressed that the successful employment of the filiform catheter depends on the avoidance of preliminary attempts to use sounds or other forms of instrumentation which augment the existing tissue trauma.

### SUPRAPUBIC CYSTOSTOMY

Whenever there is an element of doubt concerning the procedure to be employed, especially in instances in which the urethral injury is demonstrated as a major one, suprapubic drainage should be the method of choice. Kidd [6] contended that if this is done care of the urethra may be disregarded. My experience coincides with this view to the point at which reparative measures in healing have taken place. Frequently I have faced the necessity of reopening the urethral canal because of the formation of scar tissue. This can usually be well controlled by the employment of sounds for dilation, together with the use of the indwelling catheter. The suprapubic approach not only allows free and complete drainage of the bladder but permits inspection of the adjacent peritoneum and of the bladder wall and search for possible evidence of upward encroachment of extravasation into the prevesical space. Then, too, the urethral canal may be allowed to remain at rest if a small catheter for splint purposes is not indicated. As recommended by Martin [7] and described by Ockerblad,[8] combination of urethral and perineal section is to be employed when pockets of extravasation are found anterior to the rectum and in the ischiorectal fossae.

### PERINEAL SECTION

Theoretically, drainage by perineal section should prove ideal; in the Orient it is practiced almost entirely to the exclusion of other forms of drainage. In my experience, results have not been so favorable because of the variety of complications which have arisen owing to necrosis, secondary infection, resultant scar tissue and persistent sinus formation. If all details attendant on this form of drainage are strictly adhered to, this type of operative repair and drainage will prove superior in the absence of infection in patients with a heavy perineal floor. At the same time, an immediate opportunity for plastic repair of the severed urethra can be attained.

5. Wesson, M. B.: Fasciae of Urogenital Triangle, J. A. M. A. **81**: 2024-2030 (Dec. 15) 1923.

6. Kidd, cited by Moore, H.: Traumatic Rupture of Urethra and Its Treatment, M. J. Australia **1**: 657-661 (April 9) 1938.

7. Martin, H. W.: Injuries of the Posterior Urethra, J. Urol. **34**: 718-726 (Dec.) 1935.

8. Ockerblad, N. F.: Personal communication to the author.

In addition to the hazard of acquired secondary infection from a surface contact, there are other factors to be considered. Patients with thin perineal floors do not possess the ability for prompt tissue repair. It is my impression that, if perineal section is employed, it should be done in all cases in which obvious perineal drainage is indicated and care should be exercised concerning the caliber of urethral drainage in order to avoid urethral distention with its tendency to tissue necrosis in the presence of nearby drainage.

Staphylococcic and proteus infections are still frequent invaders in all types of operative procedures on the bladder and urethral canal. Even with the addition of chemotherapy to medical equipment during the last decade, there is still the problem of infection to combat. Sulfanilamide and its by-products, as well as mandelic acid, are not well adapted to immediate postoperative medication. In the presence of severe urethral injuries, in addition to the operative measures of correction, the general body resistance is at a low level. Main reliance must then be placed on forced fluid intake and the use of local antiseptics.

## REPORT OF CASES

I wish to review briefly three selected cases:

CASE 1.—L. E. C., a railway baggage man aged 41, was admitted to the Perry Hospital April 1, 1934, three hours after he had fallen astride a piece of baggage while attempting to descend from a pile of boxes. He experienced severe pain in the scrotum and the body surface in front of the rectum. During the interval immediately following the accident he was able to void a small amount of urine mixed with blood. He continued his duties, however, and finished the run of 50 miles. Later he passed a large quantity of blood. He then consulted his family physician, Dr. George Elvidge, who promptly ordered him to the hospital. Complete inability to empty the bladder ensued, and after twenty-four hours he complained of severe distress in the lower part of the abdomen from apparent distention of the bladder. Examination thirty-six hours after the accident revealed slight evidence of shock, marked distention of the lower part of the abdomen and signs of recent urethral hemorrhage. Results of rectal examination were negative, and a slight amount of discolored swelling was apparent in the scrotum and the perineum. No evidence of extravasation was noted. Before open surgical therapy was resorted to and under aseptic precautions a flexible urethral filiform was introduced and was found to pass easily through the urethra, thereby relieving the retention. The catheter with the filiform was partly removed, and a soft rubber catheter (18 French) with open tip was introduced in sleeve fashion over the filiform, which remained in place as a guide. The catheter slipped easily into the bladder and was anchored in position for ten days. The patient continued to recover without incident, and since he has been symptom free he has not reported for follow-up attention such as urethral dilation, which was advised. In passing, it might be well to stress the fact that there was no urethral instrumentation preliminary to the employment of the filiform catheter.

CASE 2.—A. I. E., a farmer aged 58, was admitted to the Lutheran Hospital Nov. 22, 1935. About four hours before hospital entry, while working on an upper floor of a grain elevator, he slipped and fell through a ladder shaft, a distance of 8 feet, landing astride a lower rung of the ladder. He experienced severe pain and distress in the perineum, where the full impact of the fall was received. In a short time a large amount of blood had trickled from the external urethral opening, and soon afterward discolored swelling was noticeable in the scrotum and perineum. After a local examination by his family physician, Dr. J. A. Snyder, he was referred to the hospital. The patient was small, sparsely built and poorly nourished and on examination was in evident distress from the effects of the perineal injury and inability to void. His temperature was 100.4 F. and the pulse rate 94. There was slight evidence of shock. Rectal examination gave negative results except for moderate distention of the bladder. Urethral catheterization was employed successfully as in case 1, and normal drainage was continued. With the patient in the lithotomy position, multiple incisions were made with perineal section to provide drainage of the left ischiorectal fossa, where a small amount of extravasated fluid had accumulated; after the initial application of 5 per cent acetic acid, hot moist packs were used and later infra-red therapy. The postoperative picture was marred because of a moderate degree of localized sepsis and tissue necrosis which involved the perineal floor. This necessitated persistent drainage through the urethral canal and to some extent of the perineal sinus. Complete healing was established in about six weeks. His further convalescence was disturbed by a stricture and partial urinary retention, which was not adequately controlled by urethral dilation. Because of his age, his poor general condition and the fact that there was evidence of marked dental sepsis, it is my impression that perhaps suprapubic drainage would have been preferable in this case.

CASE 3.—T. L., a school boy aged 17, was admitted to the Methodist Hospital Christmas Eve of 1934 after an automobile accident. Preliminary physical examination revealed marked abdominal distention with distinct evidence of urethral hemorrhage. His temperature was 97 F. and the pulse rate 130. There were a noticeable pallor and other visible signs of profound shock. A roentgenogram of the pelvis taken with a portable x-ray machine showed extensive and numerous fractures of the pelvic bones with displacement of many fragments. Since almost three hours had elapsed since the accident and the patient had been moved about considerably in being transferred from one hospital to another, emergency measures for the treatment of shock were promptly instituted. This included the use of acacia in saline solution, which undoubtedly was instrumental in saving his life. At suprapubic cystostomy, the abdominal cavity was found to be filled with a large amount of bloody extravasated fluid, obviously from a double rent in the bladder wall and a cut across the prostatic urethra, together with active bleeding from numerous blood vessels of many of the pelvic structures. Tube drainage was instituted in the bladder and prevesical space, and gauze packs and tubes were introduced into the intraperitoneal space of the pelvis. Convalescence proved slow at first, but gradual progress was maintained. Considerable difficulty was encountered in reestablishing normal urethral drainage because of scar tissue and resultant stricture of the prostatic urethra. The presence of urea-splitting organisms proved troublesome owing to the tendency toward the formation of phosphatic stones, which necessitated a second suprapubic incision three months later for the removal of a vesical calculus weighing 12 Gm. A small calculus had previously been extracted by way of the urethra. The patient recovered in a manner sufficient to enable him again to participate actively in competitive athletics, and he served as captain of his baseball team. He last reported feeling well and stated that he had only slight physical impairment.

## SUMMARY

1. Urethral injuries are incurred through a wide diversity of accidental traumas.

2. The external clinical picture affords a fairly accurate clue as to the nature and degree of the existing urethral injury.

3. Little or no systemic reaction is anticipated from injury of the anterior urethra in the absence of extravasation. Shock of variable degree is associated with trauma of the posterior urethra.

4. Urethral injury of instrumental origin assumes a role of increasing clinical importance.

5. Early and accurate interpretation influences the type of operative procedure to be employed.

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## ABSTRACT OF DISCUSSION

DR. A. J. SCHOLL, Los Angeles: Rupture occurs most commonly in the bulb and in the membranous urethra. Practically all straddle injuries occur in the bulb as a result of driving that part of the urethra against the cleft of the pubic arch, a small percentage occurring in the membranous urethra. Most instrumental injuries occur in the bulb. Injuries to the pendulous portion of the urethra are usually the result of direct violence. Several ruptures have resulted from too vigorous and enthusiastic coitus, and one case was reported in which the penis was caught in a whirling machine. Dr. Hornaday noted that the lumbermen in the Northwest are frequent victims, as are the boatmen in China. Different cities seem to have different types of injuries. O'Conor reported eight cases of rupture of the bulbous urethra as a result of stepping on a manhole cover. In New York injuries to the pendulous urethra are fairly common. Most injuries posterior to the triangular ligament consist of laceration by spicules of bone and are commonly seen in association with crushing injuries of the pelvis. Occasionally a complete shearing off of the urethra from the base of the prostate occurs. Dr. Hornaday urges caution in the use of the catheter. I agree that unwise or vigorous catheterization should not be done, but in most cases some attempt at passing a catheter is made. With most ruptures, except those of slight extent, the passage of a catheter as far as the bladder is impossible. In a few cases the accurate, gentle passage of a catheter is all that is necessary to make the diagnosis, and leaving it in is sufficient treatment. In some cases the information obtained may be misleading. If the rupture is above the triangular ligament, the catheter enters the perivesical space and the drainage of pure blood suggests bladder rupture. The fact that the catheter passes in so far and so readily lends a false sense of security to the procedure. The flow of blood and lack of urine quickly dispel any hope that the urethra is intact. I agree with Dr. Hornaday; when in doubt do a suprapubic drainage. This should be done if a catheter cannot be passed or if there is suprapubic or perivesical extravasation. I believe in free and early incision in areas of extravasation and early bladder drainage when indicated. A suprapubic drainage diverts the urinary stream; it permits exploration of the bladder for associated injuries, and it is a good approach to the urethral lesion. The suprapubic wound does not cause a much longer stay in the hospital; diverting the urinary stream permits the perineal wound to heal more rapidly with less infection and less scarring. Since reading Dr. O'Conor's paper on urethral injuries and his description of the Smith interlocking sounds, I have not found it necessary to open the perineum, except in case of extensive injury.

DR. E. L. MERRITT, Fall River, Mass.: In our community we see men aboard ships who fall down through hatchways and on various objects on vessels. We see rupture of the urethra ranging all the way from minor injuries to complete destruction of the urethra in the perineum. Recently two patients came under my care, one falling astraddle a cesspool cover and the other falling on the tailboard of a truck, whose entire urethras were completely destroyed in the perineum. In such cases suprapubic drainage with the establishment of through and through drainage, that is, doing suprapubic cystotomy, opening up and exploring the bladder and bringing a rubber tube down through the urethra and out through the external meatus with windows in the midportion which will be kept in the bladder, works out very nicely. Later the upper part of the tube can be cut and removed, the suprapubic wound being allowed to heal and then the urethra being allowed to heal around this tube. One thing that has not been brought out emphatically enough is the necessity for continued dilation of these urethras for years afterward. That is very necessary, and it is necessary to bring that out to the insurance companies in compensation cases when they can't understand why the condition does not completely clear up in several months. Another point I wish to emphasize is damage to the urethra from instrumentation. Many of us believe that the old strictures we used to see in cases of gonorrhea years ago were largely produced from trying to force No. 28 sounds into No. 18 urethras, great destruction of the mucous membrane being caused in this way rather than by the gonorrheal infection itself. So today with cystoscopic examination of children I am convinced that we are producing some damage to the urethras of young boys. During the last two years, in several cases which have come under my care, I have believed very strongly that traumatic strictures have been produced in the urethras of these youngsters by cystoscopic examination. I think that for very young boys it is better to use intravenous urography in studying the kidneys than to do a cystoscopic study unless absolutely necessary.

DR. WILLIAM R. HORNADAY, Des Moines, Iowa: There are two points I would like to emphasize. In my experience patients who had urethral and bladder injuries, in whom drainage tubes and catheters were placed, pursued a rather smooth convalescence and at the same time some of them showed rather heavy pyuria. Because of the heavy purulent drainage there was a temptation to employ external or syringe irrigations. However, I have found that a violent upset frequently occurs when this is done. The clinical picture is entirely changed many times and a stormy course then ensues. The second point refers to follow-up care of these patients. I agree that it is a good plan to advise routine dilations. Difficulty is often encountered in getting patients to carry out these instructions; however, as a matter of personal protection it is wise to make this advice a part of the permanent record.

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# NICOTINIC ACID DEFICIENCY ENCEPHALOPATHY

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We are reporting 150 cases of an "encephalopathic syndrome," a condition heretofore almost always fatal, which we believe is caused by nicotinic acid deficiency. This syndrome may occur as the only clinical manifestation of a deficiency disease or it may occur in association with pellagra, polyneuritis due to vitamin $B_1$ deficiency, the oculomotor disturbances of a "central neuritis" or scurvy. The clinical picture of this encephalopathic syndrome is more or less well defined and is characterized by clouding of consciousness, cogwheel rigidities of the extremities and uncontrollable grasping and sucking reflexes.

Bender and Schilder,[1] who have described its clinical picture, included this syndrome as one of a group of five which they called collectively "encephalopathia alcoholica." Their classification of the types of encephalopathia alcoholica was related to the most prominent manifestations: (1) clouding of consciousness and changing rigidities, (2) cerebellar symptoms, (3) catatonia, (4) alcoholic delirium and (5) polyneuritis. Groups 1 and 5 were clinically similar, the difference being that in group 1 the polyneuritis was minimal or absent while in group 5 the polyneuritis was so marked as to constitute the most prominent manifestation. We believe that these two groups are identical, differing only in the degree of clinical vitamin $B_1$ deficiency superimposed on a nicotinic acid deficiency or vice

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1. Bender, Lauretta, and Schilder, Paul: Encephalopathia Alcoholica, Arch. Neurol. & Psychiat. **29**: 990 (May) 1930.

versa. Groups 2, 3 and 4 present different clinical pictures distinct from the specific encephalopathic syndrome reported herein. We also believe that the oculomotor disturbances when they occur are a manifestation of a disease process distinct from this specific encephalopathic syndrome. Likewise to be excluded are the encephalopathic manifestations of groping, grasping and sucking which may occur during the course of delirium tremens, acute alcoholic hallucinosis, expanding intracranial lesions, infectious diseases with delirium, advanced cerebral arteriosclerosis and other diseases.

The encephalopathic syndrome does not occur exclusively in alcoholic patients. Both Spies [2] and Sydenstricker [3] have observed this syndrome in endemic pellagrins. Some of the cases of pellagra described in the recent report of Matthews [4] (cases 2 and 9) may very well have manifested this encephalopathic syndrome, although his report does not include recorded observations of grasping and sucking reflexes or of cogwheel rigidities of the extremities. Cleckley, Sydenstricker and Geeslin [5] have studied a group of subjects having stupor which responded to nicotinic acid therapy. We believe that several of their protocols are probably descriptions of the encephalopathic syndrome which we are reporting here.

*Relation of Therapy on 150 Subjects Having the Encephalopathic Syndrome*

| Treatment | Cases | Deaths | | Died Corrected From Other Causes | Mortality, per Cent |
|---|---|---|---|---|---|
| | | Number | Per Cent | | |
| House diet, dextrose and saline solution | 47 | 45 | 95.7 | 3 | 89.4 |
| House diet, dextrose and saline solution, thiamin chloride | 15 | 15 | 100.0 | 0 | 100.0 |
| Vitamin rich diet, dextrose and saline solution, vitamin B complex | 66 | 41 | 62.2 | 7 | 51.5 |
| Basal diet, dextrose and saline solution, nicotinic acid | 22 | 7 | 31.8 | 4 | 13.6 |

Prior to 1933, patients admitted to our service having this encephalopathic syndrome almost invariably died irrespective of the treatment given. Since most of the patients were dehydrated, it seemed reasonable to attempt hydration by infusions of 5 per cent dextrose in physiologic solution of sodium chloride. A total of forty-seven patients were thus treated (shown in the table), forty-five of whom died while exhibiting the encephalopathic syndrome. Three of these patients had other diseases which were probably fatal (pneumococcic pneumonia, ruptured duodenal ulcer, subarachnoid hemorrhage); if these are discarded a corrected mortality of 89.4 per cent is obtained.

Most of these subjects had polyneuritis due to vitamin $B_1$ deficiency. A considerable number had stomatitis, which in fifteen instances is now recognized as having been similar to the stomatitis of patients with pellagra. Its frequent association with known deficiency diseases suggested that the encephalopathic syndrome too might be a manifestation of some nutritional lack. If so, then from its commonest associations the deficiency would most likely be of one or more fractions of the vitamin B complex. That the encephalopathic syndrome also occurred independently, in the absence of other clinical evidence of deficiency disease, suggested the possible lack of a distinct and perhaps as yet unidentified nutritional element. Since polyneuritis was the commonest associated disease, we studied the effect of parenteral administration of from 50 to 200 mg. of thiamin chloride daily while continuing the routine treatment of hydration. The fifteen consecutive patients thus treated all died without improvement in the encephalopathic syndrome. The next group of these patients was treated with vitamin rich diets supplemented by oral and parenteral administration of large amounts of preparations rich in the B vitamins: vegex, brewers' yeast, an aqueous whole liver extract and various fractions of liver. Of the total of sixty-six patients thus treated thirty-three had other signs now recognized as due to deficiency of nicotinic acid. Twenty-five, or 37.8 per cent, of these patients recovered; the rest died while manifesting the encephalopathic syndrome, a mortality of 62.2 per cent. Seven patients in this group, however, had in addition a probably fatal disease (three advanced pulmonary tuberculosis, two pneumococcic pneumonia, one Streptococcus haemolyticus sepsis, one cirrhosis of the liver); discarding these, we obtain a corrected mortality of 51.5 per cent. This experience supported our hypothesis that the responsible factor or factors must be sought in the vitamin B complex, excluding thiamin chloride.

Shortly after nicotinic acid had been announced by Elvehjem and his associates [6] as the specific cure for blacktongue in dogs and by Spies and his associates [7] and others [8] for pellagra in man, and after verifying the efficacy of nicotinic acid in a series of our pellagrins (reported by Spies [7]), we began to test the effect of nicotinic acid on our patients having the encephalopathic syndrome.

## METHOD OF STUDY

On their admission all the subjects were given 180 cc. an hour of 5 per cent dextrose in physiologic solution of sodium chloride by mouth, usually by nasal catheter. If able to eat, they were given a basal diet extremely low in the entire vitamin B complex. The first sixteen patients were thus maintained for a control period of three days before nicotinic acid was given. The remaining patients were given nicotinic acid as soon as the diagnosis of the resident staff was confirmed by one of us. In the beginning of the study we gave to each patient 500 mg. of nicotinic acid a day, divided into five equal doses and administered at hourly intervals by mouth in the solution of dextrose in physiologic solution of sodium chloride; later this was increased to 1,000 mg. a day in ten hourly doses administered by the same method; finally, on the advice of Sydenstricker we added to this therapy 100 mg. daily of sodium nicotinate, diluted in 5 per cent dextrose in physiologic solution of sodium chloride administered intravenously and 100 mg. of sodium nicotinate injected intramuscularly. When recovery from the encephalo-

2. Spies, T. D.: Personal communication to the authors.
3. Sydenstricker, V. P.: Personal communication to the authors.
4. Matthews, R. S.: Pellagra and Nicotinic Acid, J. A. M. A. **111:** 1148 (Sept. 24) 1938.
5. Cleckley, H. M.; Sydenstricker, V. P., and Geeslin, L. E.: Nicotinic Acid in the Treatment of Atypical Psychic States Associated with Malnutrition, J. A. M. A. **112:** 2107 (May 27) 1939.
6. Elvehjem, C. A.; Madden, R. J.; Strong, F. M., and Wooley, D. W.: The Isolation and Identification of the Anti-Blacktongue Factor, J. Biol. Chem. **123:** 137 (March) 1938.
7. Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: The Use of Nicotinic Acid in the Treatment of Pellagra, J. A. M. A. **110:** 622 (Feb. 26) 1938.
8. Fouts, P. J.; Helmer, O. M.; Lepokovsky, Samuel, and Jukes, T. H.: Treatment of Human Pellagra with Nicotinic Acid, Proc. Soc. Exper. Biol. & Med. **37:** 405 (Nov.) 1937. Smith, D. T.; Ruffin, J. M., and Smith, Susan G.: Pellagra Successfully Treated with Nicotinic Acid: A Case Report, J. A. M. A. **109:** 2054 (Dec. 18) 1937. Bogart, C. N.: Nicotinic Acid in the Treatment of Pellagra, J. A. M. A. **111:** 613 (Aug. 13) 1938.

pathic syndrome was definite, usually on the third to the fifth day of treatment, the patients were given a high caloric diet rich in all vitamins, supplemented by 18 Gm. of vegex, while nicotinic acid by mouth in smaller doses was continued for from two to ten additional days. Further treatment depended on other manifestations, such as the presence of polyneuritis or scurvy or the riboflavin deficiency syndrome.[9] If one or more of these deficiency diseases was present the patient was given thiamin chloride, ascorbic acid or riboflavin as indicated.[10]

## RESULTS

Twenty-two consecutive patients with the encephalopathic syndrome were treated with nicotinic acid, seven of whom died, giving a mortality of 31.8 per cent. This death rate should be compared with the mortality of 95.7 per cent in forty-seven subjects treated by hydration alone, the mortality of 100 per cent in fifteen subjects treated by hydration plus thiamin chloride and the mortality of 62.2 per cent in sixty-six subjects treated by hydration plus the entire vitamin B complex. In the three groups not given nicotinic acid each subject who died did so without prior recovery from the encephalopathic syndrome. In the group treated with nicotinic acid, four of the seven subjects who died did so one, two, four and ten days respectively after the disappearance of the encephalopathic syndrome and of diseases probably independently fatal (pneumococcic pneumonia, cirrhosis of the liver, Streptococcus haemolyticus sepsis, multiple lung abscesses). On this basis the "corrected mortality" in the group treated with nicotinic acid is 13.6 per cent, as compared with 89.4, 100 and 51.5 per cent corrected mortality in the groups of patients not treated with nicotinic acid. The three subjects in the group treated with nicotinic acid who died while still exhibiting the encephalopathic syndrome did so within twelve, sixteen and twenty-four hours respectively after the first dose of nicotinic acid. None of these three subjects manifested any beneficial effect due to the nicotinic acid therapy, even temporarily.

## COMMENT

It seems unlikely that the response obtained for the patients treated with nicotinic acid could be due to some other factor. Hydration alone failed, hydration plus thiamin chloride failed, hydration plus vitamin B complex was partially effective but hydration and nicotinic acid was successful in a large majority of cases. Assuming that nicotinic acid is the effective therapeutic agent, the significant decrease in mortality in the group treated with preparations containing the vitamin B complex can be attributed to the nicotinic acid content of those preparations. The failure of the same preparations in more than half of the treated subjects can be attributed to their relatively small content of nicotinic acid. That the results in the group treated with nicotinic acid were due to chance seems unlikely. Each group represents consecutive admissions and each group seems large enough for the results to be significant. It is noteworthy that before the use of nicotinic acid we had never witnessed recovery in four consecutive cases but had witnessed death in more than fifteen consecutive cases of the encephalopathic syndrome.

The fact that only about half of our subjects presented other signs of deficiency of nicotinic acid, and the fact that in endemic pellagra the encephalopathic syndrome occurs only in the most advanced and severe cases [2] does not necessarily contravene the evidence that this encephalopathic syndrome is a manifestation of deficiency of nicotinic acid. Our explanation, which of course is speculative, is as follows: As a complete deficiency of riboflavin leads to a different clinical picture than partial riboflavin deficiency,[11] there may well be a similar difference in nicotinic acid deficiency. The encephalopathic syndrome represents, we believe, a complete nicotinic acid deficiency, while the pellagra syndrome (stomatitis, the common psychic symptoms [12] and possibly the dermatitis) represents a partial deficiency of nicotinic acid not complete enough to produce the encephalopathic syndrome. If this is so, patients having both pellagra and the encephalopathic syndrome would represent the picture of a partial deficiency of nicotinic acid of sufficient duration to cause the structural changes recognized as pellagra, on which has been superimposed a complete nicotinic acid deficiency, while patients showing the encephalopathic syndrome without signs of pellagra would represent a complete nicotinic acid deficiency which develops so rapidly that the structural changes in the mouth and skin characteristic of pellagra do not have time to occur.

Whether this explanation of the modus operandi is the correct one or not, it seems to us entirely justifiable, on the basis of our observations, to attribute the etiology of the encephalopathic syndrome which we have described to nicotinic acid deficiency; as such, its proper label should be "nicotinic acid deficiency encephalopathy." By this designation we do not mean to imply that there are not other causes of encephalopathy, for disturbances in brain metabolism may and do occur as a result of other factors than lack of nicotinic acid.[13] It is not to be expected that nicotinic acid should be effective in those cases or that its administration in appropriate instances will always result in cures, for the deficiency may be advanced to an irreversible stage.

## SUMMARY AND CONCLUSIONS

We have observed 150 cases of an encephalopathic syndrome characterized by clouding of consciousness, cogwheel rigidities and uncontrollable grasping and sucking reflexes, which may or may not be associated with polyneuritis due to vitamin $B_1$ deficiency, with pellagra or with the oculomotor signs of central neuritis. Patients manifesting this syndrome treated by hydration or hydration plus thiamin chloride almost invariably die; patients treated by hydration plus substances rich in the vitamin B complex show a moderate drop in mortality, but when these patients are treated by hydration plus nicotinic acid a marked drop in their mortality results. There is a probability that this syndrome represents a complete deficiency of nicotinic acid. Encephalopathy may occur in other diseases and be

9. Jolliffe, Norman; Fein, H. D., and Rosenblum, L. A.: Riboflavin Deficiency in Man, New England J. Med. **221**: 921 (Dec. 14) 1939.

10. The nicotinic acid used in this study was supplied by Merck & Co., Inc., and by the S. M. A. Corporation; the sodium nicotinate, thiamin chloride, ascorbic acid and riboflavin were supplied by Merck & Co., Inc.; The vegex and brewers' yeast were supplied by Vegex, Incorporated; the liver fractions were supplied by the Lederle Laboratories.

11. Street, H. R., and Cowgill, G. R.: Acute Riboflavin Deficiency in the Dog, Am. J. Physiol. **125**: 323 (Feb.) 1939. Sebrell, W. H., and Onstott, R. H.: Riboflavin Deficiency in Dogs, Pub. Health Rep. **53**: 83 (Jan. 21) 1938. Sebrell, W. H.; Onstott, R. H., and Hunt, D. J.: The Treatment of Blacktongue with a Preparation Containing the "Filtrate Factor," and Evidence of Riboflavin Deficiency in Dogs, ibid. **52**: 427 (April 9) 1937. Cowgill, G. R.: Personal communication to the authors.

12. Spies, T. D.; Aring, C. D.; Gelperin, J., and Bean, W. B.: The Mental Symptoms of Pellagra: Their Relief with Nicotinic Acid, Am. J. M. Sc. **196**: 461 (Oct.) 1938. Spies, T. D.; Grant, J. M.; Stone, R. E., and McLester, J. B.: Recent Observations on Treatment of 600 Pellagrins with Special Emphasis on Use of Nicotinic Acid in Prophylaxis, South. M. J. **31**: 1231 (Dec.) 1938.

13. Jolliffe, Norman: Effects of Vitamin Deficiency on Mental and Emotional Processes, Tr. A. for Research in Nerv. & Ment. Dis. **19**: 144, 1939.

caused by other factors. We believe, however, that the specific encephalopathic syndrome described, which responds to adequate nicotinic acid therapy, unless advanced to an irreversible stage, should be designated and treated as nicotinic acid deficiency encephalopathy.

## REPORT OF CASES

The following cases[14] are representative of the twenty-two cases in the series reported in this paper.

CASE 1.—*History.*—A newspaper woman aged 34, admitted to the medical service of the psychiatric division Nov. 6, 1938, was confused and disoriented, had a slow, thick, slurred speech and was unable to give an adequate history. A friend stated that she had been drinking heavily and eating little for the past six months and that during the last three weeks the drinking was very excessive and the abstention from food practically complete.

*Examination.*—The patient was poorly developed and poorly nourished and had a temperature of 102 F. and a pulse rate of 108, without respiratory distress or cyanosis. There was no evidence of a head injury. Examination of the eyes revealed no abnormalities, but owing to lack of cooperation from the patient the fundi could not be visualized. There was no stomatitis or glossitis. The blood pressure was 114 systolic, 68 diastolic. Examination of the lungs could not be done satisfactorily. A few moist rales were heard and slight dulness was noted over the left lower lobe. The heart, abdomen and extremities were not remarkable. All the tendon reflexes were intact. There were no sucking or grasping reflexes, no cogwheel rigidities and no signs of meningeal irritation. The diagnosis on admission was chronic alcoholism and bronchopneumonia.

*Course.*—X-ray examination the day of admission revealed a small patch of consolidation in the left lower lobe. The sputum contained unclassified pneumococci but the cultured blood was sterile. The patient was treated for pneumococcic pneumonia. By the fourth day all signs in the chest had disappeared but the temperature remained elevated at between 103 and 104 F. During this period the patient continued to be dull and apathetic; added neurologic signs did not develop and the cause of the fever was not determined. X-ray examination showed clearing of the small area of pulmonary consolidation. A second blood culture was sterile and agglutination test for Bacillus typhosus, Bacillus paratyphosus A and B, Brucella melitensis and Bacillus dysenteriae gave negative results. On the fifth day of hospitalization, sucking and grasping reflexes were obtained. Neither cogwheel rigidities of the extremities nor signs of oculomotor disturbance, nor evidence of stomatitis, glossitis or polyneuritis were elicited at this time. Because of a red blood cell count of 2.2 million the patient was given a transfusion of 500 cc. of whole blood. On the sixth day of hospitalization she was definitely worse. She was unable to eat, there was marked clouding of consciousness, the sucking and grasping reflexes noted on the fifth day remained and, in addition, cogwheel rigidities of the extremities were present. She appeared moribund. She was then given by nasal catheter 100 mg. of nicotinic acid every hour for five hours in 180 cc. of 5 per cent dextrose in physiologic solution of sodium chloride. This regimen was continued during the next two days. An hour after the first dose of nicotinic acid the patient no longer appeared moribund. The clouding of consciousness was definitely lessened, so that she was aware of her surroundings. Within twenty-four hours of the beginning of nicotinic acid therapy the sucking and grasping reflexes and the cogwheel rigidities could no longer be elicited. She was, however, confused and disoriented and confabulated freely. The patient's temperature on this day did not rise above 100.5 F. She continued to grow stronger and more cooperative each day. On the third day after the institution of nicotinic acid therapy the temperature fell to normal. During the next thirteen days the patient was given the regular house diet and a maintenance dose of 100 mg. of nicotinic acid daily. After eight days of nicotinic acid therapy the patient became oriented and showed no apparent memory defects. The subsequent recovery period was uneventful and she was discharged cured forty-one days after the institution of nicotinic acid therapy. Following a month of convalescence she returned to work as a staff writer on a newspaper. The final diagnosis was chronic alcoholism and nicotinic acid deficiency encephalopathy.

CASE 2.—*History.*—A 50 year old iron worker, admitted to the psychiatric division Jan. 11, 1939, did not supply a reliable history. His wife stated that he had been a heavy drinker for the past three years. One month before he had accidentally set fire to his bed while smoking and suffered first and second degree burns of the thigh. This accident confined him to bed, but he continued to consume a quart or more of whisky daily until ten days before his admission, when he became confused and delirious. A few days prior to admission he had become unresponsive. There was a history of "rheumatism" seven years before, the details of which could not be ascertained.

*Examination.*—The patient was fairly well developed and well nourished. The temperature, pulse and respiratory rates and the blood pressure were normal. Mentally the patient was dull. His speech was thick, rambling and almost unintelligible. There was no evidence of skull injury. Examination of the eyes, mouth, heart, lungs and abdomen revealed no abnormalities. The extremities showed only the burns on the thigh, which were healing. The deep tendon reflexes were intact and no abnormal reflexes could be elicited. There were no signs of meningeal irritation.

*Course.*—The patient continued in a dull, apathetic state. He was maintained with the house diet and nourishing fluids. During the first eight days his temperature varied from 100 to 101.5 F. He became progressively weaker and less responsive. On the eighth day he showed clouding of consciousness, uncontrollable sucking and grasping reflexes and cogwheel rigidities of the extremities. On the same day moderate eyeball tenderness and a scarlet redness of the buccal mucous membranes developed. He was no longer able to take food by mouth and was transferred to the medical service. The patient was then given 100 mg. of sodium nicotinate intravenously in 1,000 cc. of 5 per cent dextrose in physiologic solution of sodium chloride and 100 mg. of sodium nicotinate intramuscularly. In addition he was given 100 mg. of nicotinic acid by nasal catheter every hour for ten hours, together with 180 cc. of 5 per cent dextrose in physiologic solution of sodium chloride per hour. The following day the sucking and grasping reflexes, the cogwheel rigidities of the extremities and the scarlet redness of the oral mucous membranes had disappeared, and the temperature was normal. The patient's speech was still thick and he was still confused and disoriented. The next day he was still disoriented but the encephalopathic signs had not returned. Parenteral administration of sodium nicotinate was stopped, but he continued to receive 1,000 mg. of nicotinic acid orally each day. Mental improvement progressed so that on the fifth day of therapy the patient presented no abnormalities. He was discharged from the hospital after ten days of nicotinic acid therapy. The final diagnosis was chronic alcoholism, nicotinic acid deficiency encephalopathy and pellagrous stomatitis.

CASE 3.—*History.*—An unemployed Puerto Rican laborer aged 47 was admitted to the medical service of the psychiatric division Feb. 21, 1939, because of progressive stupor. No other history could be obtained.

*Examination.*—The patient, who was well developed, was semistuporous. The temperature, pulse and respiratory rates and the blood pressure were normal. There was no evidence of skull injury. There was marked corneal opacity of the left eye. The right pupil was in middilatation and reacted sluggishly to light. There was a nystagmus on lateral gaze but no ophthalmoplegia. The right fundus was normal. The oral mucous membranes were scarlet red, with marked ulceration and a pearl gray exudate of the buccal mucous membranes opposite the molar teeth and under the tongue. The tongue

14. In these reports laboratory examinations are not noted unless the results are significant. The routine determinations included urinalysis, chemical analysis and serologic reaction of the blood and spinal fluid, spinal fluid cell count, complete blood count and study of the stained smear, x-ray examination of the skull, heart and lungs, and electrocardiographic tracings.

was swollen, showed indentation of the teeth, and was smooth and scarlet red. The heart was not remarkable and the lungs were apparently clear, although the examination was not satisfactory. The abdomen was normal. The extremities showed no cyanosis, clubbing, edema or dermatitis. There were marked sucking and grasping reflexes and cogwheel rigidities of the extremities. The ankle jerks were absent but all other tendon reflexes were obtained. Neither muscle tenderness nor hyperesthesia of the skin was elicited. The Babinski and Hoffmann reflexes were not present and there were no signs of meningeal irritation. There was perseveration of sounds, and the speech was unintelligible.

*Course.*—The patient was immediately given 100 mg. of sodium nicotinate in 1,000 cc. of 5 per cent dextrose in physiologic solution of sodium chloride intravenously and 100 mg. of sodium nicotinate intramuscularly. In addition, 100 mg. of nicotinic acid was given every hour for ten hours, together with 180 cc. of 5 per cent dextrose in physiologic solution of sodium chloride by nasal catheter. On the following day the patient was considerably improved in that the stupor had disappeared and he was able to eat the basal diet. The other encephalopathic manifestations and the character of the speech were unchanged. The scarlet redness of the oral mucous membranes and of the tongue had markedly lessened. On the third day there was further general improvement. The redness of the oral mucous membranes disappeared; but sucking and grasping reflexes remained, although they were difficult to elicit, and the cogwheel rigidities were still present. The patient's speech was unchanged, consisting of unintelligible perseveration of sounds. On the fourth day the condition was unchanged. The patient's mouth was natural; sucking and grasping reflexes and cogwheel rigidities were inconstantly present and were difficult to elicit. At this time he was being given the regular house diet supplemented by 18 Gm. of vegex. Parenteral administration of sodium nicotinate was stopped but he continued to receive nicotinic acid orally in doses of 100 mg. a day until the sixteenth day of hospitalization. By the sixth day no encephalopathic manifestations could be elicited; the patient's speech was now intelligible but he still perseverated. He was able to be up in a chair. On the seventh day he was made ambulant. By the tenth day his speech was clear, except for slight perseveration, and he was oriented as to place but not as to time. His general physical condition improved progressively but he continued to show marked gaps in memory and occasional perseveration in speech. On the thirty-first day of hospitalization, when he was transferred to a state hospital for mental disease, he was definitely oriented as to place but incompletely oriented as to time. The final diagnosis was chronic alcoholism, nicotinic acid deficiency encephalopathy and pellagrous stomatitis.

CASE 4.—*History.*—An unemployed white man aged 30 was admitted to the medical service of the psychiatric division Jan. 7, 1939, in stupor. His wife stated that he had been a heavy drinker for ten years and had been rarely, if ever, sober in the past six months, during which time his food intake had been grossly inadequate. For two weeks prior to admission he was confined to bed because of weakness. Since two days before he had been unable to form intelligible words, though moaning and groaning sounds were frequent.

*Examination.*—The patient was well developed but poorly nourished, with a temperature of 104.6 F., a pulse rate of 144 and a respiratory rate of 26 per minute without respiratory distress. There was marked clouding of consciousness. There was no evidence of head injury. The pupils were fixed to light, and the left was larger than the right. The lips were dry and crusted. The oral mucous membranes were a scarlet red with a superficial grayish white ulceration opposite the molar teeth and on the floor of the mouth. There was nuchal rigidity. The heart, lungs and abdomen were not remarkable. The extremities showed no cyanosis, clubbing, edema or dermatitis. There appeared to be moderate atrophy of the calf muscles. There were marked sucking and grasping reflexes and cogwheel rigidities of the extremities. The biceps, triceps and knee jerks were present, but ankle jerks could not be elicited. The Hoffmann and Babinski reflexes were not obtained. The spinal fluid was clear and not under increased pressure, and the cell count was normal. The serologic reaction of the blood and spinal fluid and the chemistry were normal.

*Course.*—Administration of 5 per cent dextrose in physiologic solution of sodium chloride by nasal catheter, in amounts of 180 cc. every hour, with 100 mg. of nicotinic acid each hour, was begun immediately. In addition, 1,000 cc. of 5 per cent dextrose in physiologic solution of sodium chloride with 100 mg. of sodium nicotinate was administered intravenously, and 100 mg. of sodium nicotinate was injected intramuscularly. The patient exhibited no improvement in the signs of the encephalopathic syndrome and died twelve hours after admission. The final diagnosis was chronic alcoholism, nicotinic acid deficiency encephalopathy and pellagrous stomatitis. Permission for an autopsy was not obtained.

CASE 5.—*History.*—A Negro laborer aged 31 was admitted to the medical service of the psychiatric division Aug. 31, 1938, as a transfer from another service into which he had been admitted four days previously, complaining of sore mouth, difficulty in swallowing, diarrhea and poor appetite of ten days' duration. He had had scaling and thickening of the skin of his hands for about one year. Since 1925 he had been drinking from a pint to a quart of whisky daily. His diet was grossly inadequate. He had had malaria four years before but stated that there had been no history of a venereal disease.

*Examination.*—The patient was acutely ill, fairly well developed and well nourished and in no cardiac or respiratory distress, with a temperature of 99.2 F., a pulse rate of 100 and a respiratory rate of 20 per minute. He was dull, slow in response, confused and disoriented. His head showed no evidence of trauma. He could barely open his mouth. The tongue was swollen. The oral mucous membranes were scarlet red, with marked ulceration covered by a grayish white slough. The heart, lungs and abdomen were not remarkable. There was no cyanosis, clubbing, or edema of the extremities. The dorsum of the hands showed a scaly, dry, thickened, pigmented dermatosis. The face, neck and groins were clear. The knee jerks and ankle jerks were absent. There was no apparent tenderness of the calf muscles or plantar hyperesthesia, nor were there any sucking or grasping reflexes or cogwheel rigidities at this time.

*Course.*—The patient was maintained with the basal diet and 180 cc. of 5 per cent dextrose in physiologic solution of sodium chloride every hour orally until the second day, when his condition was noted to be somewhat worse. He became lethargic, and sucking and grasping reflexes and cogwheel rigidities of the extremities developed. He was then given 100 mg. of nicotinic acid by mouth every hour for five hours. At this time, because of the sore mouth, the intake of food was very small. This regimen was continued for four days. On the second day of nicotinic acid therapy the oral lesions were definitely improved, with marked diminution in the scarlet redness and ulceration. The diarrhea lessened. The sucking and grasping reflexes and cogwheel rigidities, however, could still be obtained. On the fourth day of nicotinic acid therapy the mouth was quite natural except for a slight remaining redness of the inner surface of the lower lip. The encephalopathic signs had cleared, although the patient still exhibited memory gaps and periods of confusion. On the fifth day the regimen was changed to a high caloric, vitamin rich diet, supplemented by 4 cc. of vegex three times a day. On this and the next two days the patient was also given 50 mg. of nicotinic acid daily. From the second day following his admission to this service the patient's temperature ran an irregular, spiking course, ranging between normal and 103 to 104 F., with the pulse in proportion. He began to cough and raise a dark sputum, although the lungs were clear at that time. On the sixth day signs of consolidation developed in the right lower lobe, with dulness, diminishing breath sounds and crepitant rales. The sputum contained no acid-fast organisms but did show unclassified pneumococci. From this time the patient's course was progressively downhill, although none of the encephalopathic manifestations reappeared. The signs spread through the right and left lungs. The patient raised large amounts of foul sputum and had an irregular, spiking temperature. X-ray examination revealed large cavities in the bases of both lungs

with fluid levels and many smaller cavities throughout both lungs. The patient died fifteen days after admission to this service and ten days after the disappearance of the encephalopathic syndrome. Permission for an autopsy was not obtained. The final diagnosis was chronic alcoholism, multiple lung abscesses, nicotinic acid deficiency encephalopathy, pellagrous stomatitis and peripheral neuritis.

Twenty-Sixth Street and First Avenue.

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# SECTION OF THE HUMAN HYPOPHYSIAL STALK

## ITS RELATION TO DIABETES INSIPIDUS AND HYPOPHYSIAL FUNCTIONS

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That diabetes insipidus in man is caused by lesions in the environs of the hypothalamus is well established by human clinical and pathologic material. It is indeed pathognomonic of a lesion of some type in this general region. However, the precise limits of the neurogenic center have not been established. For example, the relationship of the stalk of the hypophysis (infundibulum), the supra-optic and paraventricular nuclei, the tuber cinereum and the component parts of the hypophysis itself still remain in dispute. Human pathologic material, particularly tumors, although the safest source of interpretation as applied to man, has nevertheless been of little value in sharply localizing this center because, with few exceptions, the lesions have been so large that more than one of the disputed areas have been involved.

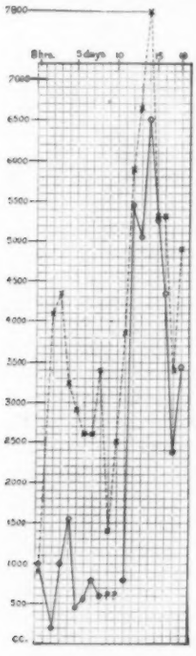

Chart 1.—Degree of polyuria and polydipsia immediately after section of the hypophysial stalk, Jan. 24, 1928. Fluid intake is indicated in these charts by dashes and the urine output by the solid line.

The animal experiments on this problem are open to even more criticism, because the component parts of the so-called hypothalamic-hypophysial ensemble are so closely related that it is virtually impossible to attack one part without affecting others. In dogs and cats the hypophysis lies in such direct contact with the base of the brain that the hypophysial stalk is little more than a name. It is impossible to divide or to place a clip on the infundibulum without at the same time traumatizing both the hypophysis and the hypothalmus. Moreover, in these animals hypophysial cells are spread along the pars tuberalis and always the microscopic presence or absence of these cells constitutes support or objection to any particular theory. Reichert and I [1] inspected this region directly and produced lesions with the greatest possible precision but concluded from the capricious results that the experimental attack could not, in its present form at least, offer a solution of the problem. Camus and Roussy [2] and soon thereafter Bailey and Bremer [3] concluded from their canine experiments that the center was at the base of the brain and that the hypophysis had nothing to do with diabetes insipidus. We were inclined to agree with them. On the other hand, Biggart and Alexander [4] and Fisher, Ingram and Ranson,[5] who have concentrated on the experimental attack, are quite dogmatic in concluding from results which appear to be no less capricious than our own that the hypophysis is a necessary part of the anatomic setup for water control and therefore for the induction of diabetes insipidus. Both Biggart and the Northwestern University investigators have probably done the best experimental work that is possible and their work is quite generally accepted, and yet their conclusions are not satisfying to one who has been intimately associated with the clinical side of diabetes insipidus. It is their opinion that polyuria and polydipsia are due to the loss of an antidiuretic hormone which is secreted by the posterior lobe of the hypophysis and that the loss of this hormone is due to the deprivation of its nerve supply which passes from the supra-optic nuclei down the infundibulum to the posterior lobe. They also agree that the intact, or at least partially functioning, anterior lobe is an indispensable part of the mechanism—a conception first advanced by von Hann [6] based on a group of human hypophysial material—which was poorly chosen, however, for such a hypothesis.

Their conclusions, however, do not answer the following clinical facts: (1) Hypophysial tumors confined to the sella turcica (i. e., not affecting the hypophysial stalk or the hypothalamus) never induce diabetes insipidus regardless of the amount of destruction of the hypophysis; (2) operations on the human hypophysis for hypophysial tumors are never followed by diabetes insipidus unless the stalk or base of the brain is traumatized.

Recently the supra-optic and paraventricular nuclei have been postulated as part of the neurogenic mechanism. They may well be part or even an essential part of a center for water control, but the evidence is not convincing. In this connection it is worthy of note that in a recent assembly of six cases of colloid cysts filling the third ventricle I did not find a history of diabetes insipidus in one before operation, and in none did it follow their removal. Of nineteen other solid tumors filling the third ventricle and producing greater pressure on the hypothalamus, there was a history of polyuria and polydipsia in only three. These facts only make one wonder why compression of the supra-optic and paraventricular nuclei, if they are parts of the center, produces diabetes insipidus so infrequently.

Two quite contradictory facts at once confuse the picture when an attempt is made to draw final deductions concerning a possible hormone from the posterior lobe: (1) Injections of the posterior lobe usually, but not always, markedly diminish the output of urine and intake of fluids in diabetes insipidus, and yet (2) the posterior lobe is excessively a nervous structure and does not contain glandular cells unless one accepts the

1. Dandy, W. E., and Reichert, F. L.: Studies on Experimental Hypophysectomy: I. Effect on the Maintenance of Life, Bull. Johns Hopkins Hosp. **37**: 1 (July) 1925. Dandy, W. E.: Benign Tumors of the Third Ventricle: Their Diagnosis and Treatment, Springfield, Ill., Charles C. Thomas, Publisher, 1933.

2. Camus, J., and Roussy, M. C.: Présentation de sept chiens hypophysectomisés depuis quelques mois, Soc. de biol. **74**: 1386, 1913.

3. Bailey, Percival, and Bremer, Frédéric: Experimental Diabetes Insipidus, Arch. Int. Med. **28**: 773 (Dec.) 1921.

4. Biggart, J. H., and Alexander, G. L.: Experimental Diabetes Insipidus, J. Path. & Bact. **48**: 405 (March) 1939.

5. Fisher, Charles; Ingram, W. R., and Ranson, S. W.: Diabetes Insipidus and the Neurohormonal Control of Water Balance: A Contribution to the Structure and Function of the Hypothalamic Hypophysial System, Ann Arbor, Mich., Edward Brothers, Inc., 1938.

6. von Hann, F.: Ueber die Bedeutung der Hypophysenveränderungen bei Diabetes insipidus, Frank. Ztschr. f. Path. **21**: 337, 1918.

occasional acini of the pars intermedia that intrude or unless the pars intermedia is included as part of the posterior lobe.

The transfer of results obtained on experimental animals to man is never too certain. The solution of this problem will doubtless be from well selected cases of human material. In man there is complete anatomic separation of the hypothalamus and hypophysis by a

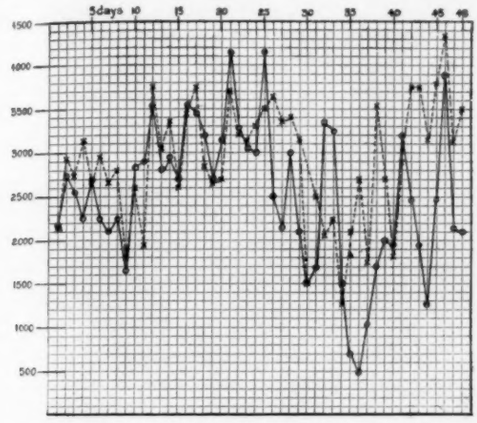


Chart 2.—Fluid intake and urine output on second admission, Feb. 6, 1933.

hypophysial stalk that is a centimeter or more in length, and hypophysial cells are not scattered along its course. In due time small tumors, or perhaps other lesions, will be found involving only one part of the ensemble. Indeed one perfect specimen of this type has been described by Futcher.[7] It was a small metastatic tumor at the base of the brain beginning at the cerebral side of the infundibulum and extending intracerebrally. The hypophysis itself was far removed from any direct effect of the growth. A precise surgical experiment is added in the present communication—sharp transverse section of the hypophysial stalk at its middle and without trauma to either the base of the brain or the hypophysis; a permanent polyuria and polydipsia followed. This case is presented not only for its effect on the production of diabetes insipidus but also for the effects on the hypophysis—all essentially negative.

## REPORT OF A CASE

A girl aged 17 years was admitted to the Johns Hopkins Hospital Jan. 21, 1928, because of loss of vision. Before admission she had been studied in the neurologic dispensary, where no definite diagnosis was made. At this time she had been totally blind in the left eye for ten weeks, and, although there was no well defined hemianopia in the right eye, I thought there was a very definite difference in the intensity for color in the nasal and temporal fields, the color being more clearly recognized in the nasal field. Moreover, she had volunteered that she could see things more plainly to her left than to her right with the right eye. This led me to suspect a tumor in the region of the optic tracts. Visual acuity was 15/200 in the right eye. There were no other subjective complaints or objective signs.

The hypophysial region was explored on the left (blind) side January 24. The optic nerves looked quite normal from the superior view. Since she was totally blind in the left eye, this optic nerve was divided in order to make a further search beneath the optic tracts. The hypophysial stalk was then in full view. To obtain a better view, the hypophysial stalk was divided with scissors midway between the base of the brain and the diaphragm of the sella. This was done without the slightest bleeding and without sponging either to the cut side of the stalk or to the contiguous region. The stalk was about 1 cm. long. The operation, therefore, serves as an example of a precise experiment in which the sharply defined transection at the middle of the stalk is responsible for the subsequent effects. It also excludes from consideration any direct participation of the base of the brain or of the hypophysis itself.

On the evening of the operation, soon after consciousness appeared, there was marked thirst, and this was quickly followed by a very high output of colorless urine with a very low specific gravity. Chart 1 shows the course of the polyuria and polydipsia during her subsequent stay in the hospital, a period of nineteen days. A postoperative specimen of urine examined for sugar was normal.

The patient returned to the hospital Dec. 5, 1930, nearly three years after the operation. Her vision had remained unchanged until eight days previously, when she became totally blind in the remaining eye. In 1928 she had had numbness and weakness of the right leg lasting a month and clearing completely. Another similar attack occurred in May 1930 but involved both sides of the body. She was pregnant at the time. The sensory and motor changes disappeared almost completely in six weeks. It was now evident that the correct diagnosis was multiple sclerosis. She said that ever since the operation she had been troubled with severe thirst and frequency of urination—it was necessary for her to get up several times every night to void. Vision returned to the previous level soon after she left the hospital.

Feb. 6, 1933, the patient again entered the hospital because of advanced sensory and motor changes over the entire body. A fluid and urine chart was kept during her stay of eight days (chart 2).

In August 1933 she again entered the hospital. She now appeared to be in the terminal stages of the disseminated disease and was practically helpless. The polyuria and polydipsia still persisted unchanged (chart 3).

She was again seen during October 1937. Her general recovery had been remarkable. She was doing her own house-

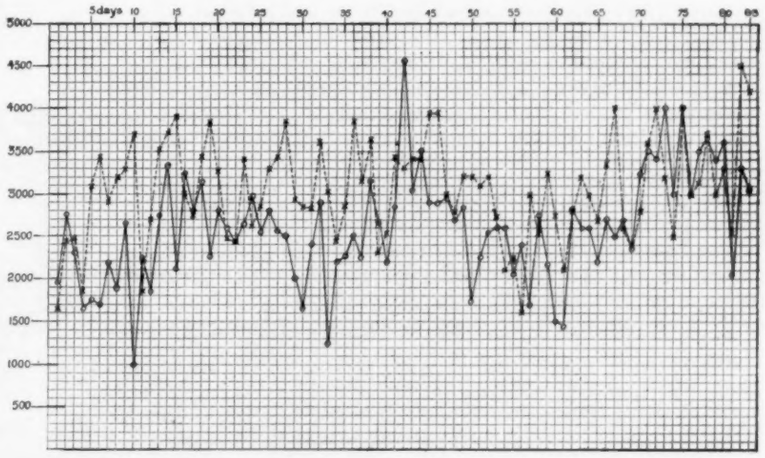


Chart 3.—Fluid intake and urine output on third admission, June 3, 1933. The three charts cover a period of five and one half years. The polyuria and polydipsia remain practically unchanged after eleven years.

work and walked without support, although with a difficulty of gait. The vision in the right eye (4/200) was good enough to permit reading. However, there was only a small central field. The urinary output and intake of water were essentially unchanged; voluntary control over the urine had returned. She looked well.

The last word from her was received by letter May 1, 1939, more than eleven years after the operation. She said "My general condition remains about the same as when I last saw you, except that I cannot walk quite so well. My weight remains the same. The thirst and increased urination are unchanged. I get up two and three times every night to urinate."

7. Futcher, T. B.: Diabetes Insipidus and Lesions of the Midbrain, Am. J. M. Sc. **178**: 837 (Dec.) 1929.

SUMMARY

From a very sharply defined lesion, i. e., division of the stalk of the hypophysis without trauma to the contiguous parts of the brain, a permanent (eleven years) polyuria and polydipsia ensued. It is therefore evident that division of the stalk of the hypophysis is solely responsible for polyuria and polydipsia. This, of course, does not mean that injury to, or a lesion on, the base of the brain would not also produce the same disturbances. In fact there is every reason to believe that it would do so. Futcher's case is ample evidence. Clinical experience has shown that trauma to the hypophysis does not produce polyuria and polydipsia.

NOTES ON HYPOPHYSIAL FUNCTIONS

The patient subsequently married. A baby was born Sept. 1, 1930 (two years and nine months after section of the hypophysial stalk). Pregnancy and labor were normal. She nursed the baby for three months and had ample milk.

In 1933 she had a second child at full term and by normal delivery. This baby was nursed four months; supplementary feedings became necessary when the amount of milk became less abundant.

The menstrual periods were regular following the operation and for several years thereafter. In 1934 some irregularity first appeared; at times a period would be passed.

There have been many blood pressure readings. Before operation the pressure was 140/90, 136/80 and 135/90. Two years after the operation it was 120/76. Five years later it was 140/90, 130/90, 138/80, 105/75, 118/68 and 110/70.

Her weight was 122 pounds (55.3 Kg.) at the time of the operation and 140 pounds (63.5 Kg.) in 1933, five years after the operation.

The skin has retained its normal color; there has been no loss of hair on the head, axillae or pubic region.

Numerous examinations of the urine have been made. There was no sugar in the urine in the first postoperative specimen and none in three subsequent specimens. On her subsequent admissions twenty-seven examinations were recorded and a trace of sugar was found on two occasions. Seven times a trace of albumin was found.

CONCLUSIONS

1. A sharply defined lesion transection of the hypophysial stalk in man, without trauma to the base of the brain or to the hypophysis, produced a permanent (eleven years) polyuria and polydipsia.

2. This failed to disturb the known hypophysial functions, such as (*a*) menstruation, (*b*) pregnancy, (*c*) lactation, (*d*) weight, (*e*) blood pressure, (*f*) sugar content of urine (there was no glycosuria immediately after the operation or subsequently except for a trace on two occasions).

**Aircraft Toilets.**—Water flushed toilets are not practical on board aircraft, owing to the weight of the water required. It is the practice of flying boats to vent the waste material directly overboard; but since this is prohibited in flying overland other methods of waste disposal must be used. Chemical toilets are frequently used but some of these are not satisfactory, owing to the odor of the chemical, which may itself be unpleasant. The best procedure is to vent the waste material into a tank, which then must be emptied, disinfected and deodorized at each stop. The toilet itself should likewise be scrubbed and disinfected at each stop regardless of the manner of waste disposal.—Armstrong, Harry G.: Principles and Practice of Aviation Medicine, Baltimore, Williams & Wilkins Company, 1939.

# ADHESIONS OF CHOLECYSTO-HEPATIC FLEXURE

## NEW SYNDROME WITH SPECIFIC TEST

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WASHINGTON, D. C.

Ten years ago I was impressed by a series of cholecystograms of a small nonfunctioning gallbladder contracted on a stone, in which the hepatic flexure of the colon remained in exact apposition in all the films made at different times (fig. 1).

Since that time I have collected some twenty cases, most of them proved by operation, of localized adhesions



Fig. 1 (Mrs. G.).—Large gas-filled colon staying in apposition to stone.



Fig. 2 (Mrs. T.)—Excellent function, but colon fastened to tip.

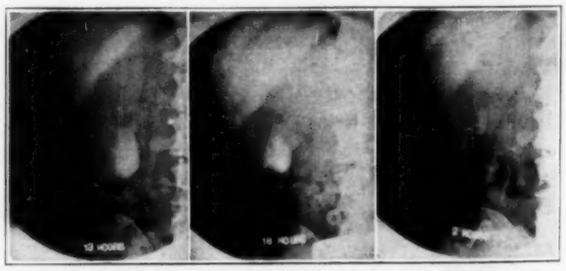

Fig. 3 (Mr. H.).—Gas following contracting gallbladder.

of the hepatic flexure to the gallbladder. I have gradually worked up a description of this new syndrome together with a specific x-ray test for it.

PATHOLOGY AND MECHANICS

The hepatic flexure is adherent, frequently at a sharp angle, to an otherwise free gallbladder fundus. The gallbladder may fill, concentrate and empty normally, but the weight of the colon dragging on it produces the symptoms.

SYMPTOMS

The patients may complain of the usual type of noncolic gallbladder dyspepsia or there may be more atypical symptoms. There is dull pain in the epi-

Read before the Eastern Radiologic Society, Feb. 11, 1939.

gastrium or right upper quadrant of the abdomen, and in addition to gas pressure there may be nausea. There is not as much dyspepsia at night as in the usual case of cholecystitis, and a characteristic fact is that symptoms are present mostly during the day because of the upright position with its consequent pull.

There is apt to be tenderness in the upper right quadrant, especially in the upright position, and frequently muscle resistance.

### DIAGNOSIS

A definite diagnosis can be made. The patient may be suspected of having a gallbladder disorder and yet cholecystograms may indicate perfect function. If then it is noted that localized gas in the colon remains in proximity to the same spot on the gallbladder in each of the films one may be reasonably sure of the diagnosis, even without the specific test to be described later (figs. 2, 3, 4 and 5). I have one case in which the colon is shown in the same spot with seven years elapsing between two sets of studies.

It is evident that instead of trying to rid the patient of gas by medication, as has been recommended, I want gas present to show the relationship. If one is not certain of adhesions after the usual cholecystograms, the specific test is indicated.

### SPECIFIC TEST

The specific test for adhesions of the cholecystohepatic flexure consists in simultaneous examinations with barium and dye. A barium sulfate meal is given twenty-four hours before the first film, to fill the colon from above. An enema is not satisfactory. Thirteen hours before the first film the gallbladder dye is given as usual. If the first film shows an angulated colon in absolute proximity to a small spot on the fundus, a second film is made in three hours. If the relationship

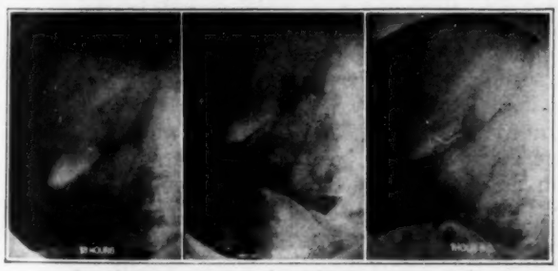

Fig. 4 (Mrs. H.)—Large hepatic flexure adherent to tip.

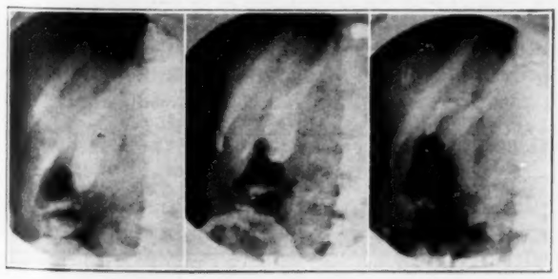

Fig. 5 (Miss E.).—Another example of localized adhesions.

of the two organs is exactly the same, a fat meal is given and another film made two hours later. If the colon follows the contracting gallbladder and the two shadows are as close as ever, the diagnosis is nearly 100 per cent accurate (fig. 6). If any doubt remains, a film may be made in the upright position to try to separate the organs.

### RESULTS

By bringing out this cholecystographic interpretation I have stepped away from the routine interpretation, based on visualization of stones and dysfunction of filling, concentration or emptying, into what might be thought to be the borderland of anatomic diagnosis.

Fig. 6 (Mr. K.) Specific test, showing how adhesion to contracting gallbladder can almost be visualized.

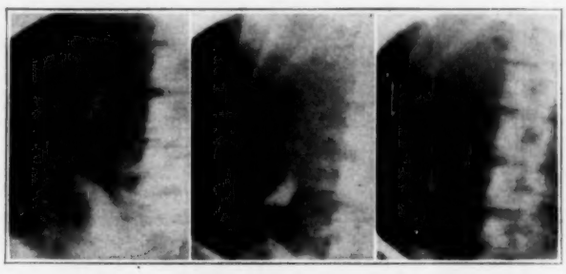

Fig. 7 (Mrs. G.).—Localized adhesions in case reported in text.

This extension might be thought to be extra hazardous with possibly many errors of commission, but such has not been the case in my experience. There have been few errors and, on the contrary, many cases have been correctly diagnosed which were previously pronounced "gallbladder normal." What is more important, these patients have been cured instead of being condemned to a continuance of their symptoms in the upper right quadrant for which no adequate cause could be found.

### TREATMENT

Cholecystectomy is followed by as perfect results as in other types of gallbladder disease. If the gallbladder is entirely normal in appearance, it is possible that simple division of the adhesions, allowing the colon to drop and placing the patient in the postoperative sitting position, might suffice. I have not dared so far to try this. My last case shows that, had the gallbladder been left in as I was tempted to do, the patient might not have been relieved, as there was an unexpected pathologic condition inside the organ.

### REPORT OF CASE

Mrs. J. L. G., aged 41, the mother of three children, complained Jan. 16, 1939, of gas dyspepsia for twenty-five years. The appendix had been removed twenty years before without benefit. Constipation had always been present and for three years there had been increasing soreness in the upper right quadrant. Pain without colic was present in the "pit of the stomach" an hour or so after meals.

The physical examination was negative except for well marked tenderness to moderate pressure starting under the right costal margin near the midline and extending outward toward the flank. There was a sensation either of a palpable gallbladder or of localized muscle resistance. All laboratory tests were negative. Gastrointestinal x-ray examination was negative. Cholecystograms were reported by the radiologist

to show a normal gallbladder. My own diagnosis was gallbladder adhesions of the hepatic flexure (fig. 7).

Operation Feb. 3, 1939, showed the adhesions exactly as pictured, only somewhat more extensive. At first I thought that I would leave the gallbladder in, after freeing it, but the serosa was a little dull. Fortunately it was taken out, as examination showed two small papillomas, a few small cholesterol bits in the mucosa and several loose bits of cholesterol (earliest strawberry gallbladder). The latest report is "I feel so good inside."

Operation is not advocated unless the patient has definite symptoms in the upper right quadrant sufficient to have indicated cholecystograms or until all other conditions have been ruled out by adequate examinations. It is recommended, however, when requirements have been met and the test shows the characteristic changes.

SUMMARY

1. The syndrome here described for the first time is produced by mechanical pull of localized adhesions between the hepatic flexure of the colon and the gallbladder.

2. The new test devised for the condition is very accurate.

3. Recognition of the condition and operation will bring cure to many sufferers from pain in the upper right quadrant who were formerly unrelieved.

The Farragut Medical Building.

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# TOXIC HEPATITIS AND ACUTE YELLOW ATROPHY

## FOLLOWING MEDICATION WITH A CINCHOPHEN-CONTAINING "COLD CURE"

CYRIL M. MacBRYDE, M.D.

ST. LOUIS

The dangers of cinchophen medication have been repeatedly emphasized by many writers, who have reported large numbers of cases with toxic effects and a high mortality. Bryce [1] has collected reports of 190 cases of cinchophen poisoning occurring from 1913 to 1935, 43.6 per cent of the cases being fatal. Snyder and his co-workers [2] reported 712 deaths from acute yellow atrophy in the hospitals in the state of New York between 1923 and 1933. Evidence presented by Palmer and others [3] suggests that the use of cinchophen may account for a large percentage of all cases of acute yellow atrophy. Palmer and his co-workers collected reports of 191 cases of liver damage following cinchophen medication with eighty-eight deaths, a mortality of 46.8 per cent. In six of twenty-one fatal cases of acute, subacute or chronic toxic necrosis or cirrhosis there was a history of cinchophen ingestion.[3] There was possible circumstantial evidence of cinchophen medication in eight more cases of this series, which added up to a possible 67 per cent. Evidence from several large series indicates that once jaundice is caused by cinchophen death may be expected in approximately 50 per cent of cases.

In spite of the evidence of the high toxicity of the drug, its widespread use continues. White [4] estimated in 1931 that 90,000 pounds (40,000 Kg.) of cinchophen are consumed annually in the United States. Hench [5] reported that thirty-two drugs in common use contained cinchophen and estimated that 500 others undoubtedly contained it. Since many persons evidently take cinchophen without obvious toxic effects, it has been suggested that a special idiosyncrasy, an allergic type of reaction or previous liver damage must explain the cases of cinchophen poisoning. Persons of any age are susceptible. In Bryce's series there were fifteen patients under the age of 20 years, five of whom died. In the majority of cases the condition occurs in the middle or older age groups, probably because of the higher incidence of arthritis at these ages and the common use of cinchophen as an analgesic. Women may be more susceptible than men, as 63 per cent of Bryce's series of 190 patients were females.

It is doubtful whether a special idiosyncrasy can be invoked, since in many of the fatal cases large doses were taken for considerable periods of time before toxic effects appeared. Sugg [6] has collected reports of thirty-two toxic cases with twenty-two deaths in which the untoward effects appeared only after an interval had elapsed between two series of doses. This is taken to indicate that the response was allergic, following the development of an acquired sensitivity. The prompt cutaneous manifestations, such as the erythematous, morbilliform and urticarial rashes appearing shortly after ingestion of the drug, suggest antigen-antibody response and an acquired sensitivity of allergic type. However, the weight of evidence as related to the toxic hepatitis following cinchophen medication suggests that liver damage is caused by direct action of cinchophen on the liver cells. The experimental work of Barbour and Fisk [7] indicates that some injury to the liver can always occur but that it seldom progresses to the point of clinical recognition. In the great majority of cases with toxic effects there is no previous history suggesting liver damage. The changes initiated in the liver seem to be to a certain extent, at least, irreversible, since even with the best known treatment, initiated as soon as toxic symptoms are observed, nearly half of the patients who become jaundiced eventually die. Large doses may often be continued with apparent impunity for many months, when jaundice and death may suddenly intervene. Willcox [8] has emphasized the time factor. He has pointed out that toxic hepatitis apparently resulting from cinchophen may come on many months after the cessation of cinchophen administration. Reichle [9] has also emphasized this and has shown that the liver involvement as noted at necropsy may indicate a chronic process, although the patient dies within a few weeks after the appearance of symptoms. The long interval of time which may elapse between the ingestion of the drug and the onset of symptoms speaks against allergy as an explanation for the liver damage. It is likely that in a number of cases

From the Department of Medicine, Washington University School of Medicine.

1. Bryce, D. A.: The Relation of Age and Sex to Incidence and Prognosis in Phenylcinchoninic Hypersensitivity, J. Allergy **9:** 514-518 (July) 1938

2. Snyder, R. G.; Traeger, C. H.; Zoll, C. A.; Kelly, L. C., and Lust, F. J.: The Use of Cinchophen in the Treatment of Chronic Arthritis, J. Lab. & Clin. Med. **21:** 541-547 (Feb.) 1936.

3. Palmer, W. L.; Woodall, P. S., and Wang, K. C.: Cinchophen and Toxic Necrosis of the Liver: A Survey of the Problem, Tr. A. Am. Physicians **51:** 281-393, 1936.

4. White, E. P. C.: Study on Series of Arthritic Patients Under Continuous Mono-iodo-cinchophen Treatment with Special Reference to Action of Cinchophen Molecule on Liver Tract, J. Lab. & Clin. Med. **17:** 17-21 (Oct.) 1931.

5. Hench, P. S.: Derivatives of Cinchophen and Their Toxicity, Proc. Staff Meet., Mayo Clin. **7:** 427-428 (July 20) 1932.

6. Sugg, E. S.: Acquired Sensitivity to Cinchophen, Am. J. M. Sc. **195:** 473-479 (April) 1938.

7. Barbour, H. G., and Fisk, M. E.: Liver Damage in Dogs and Rats After Repeated Oral Administration of Cinchophen, Ethyl Ester of Paramethylphenylcinchoninic Acid (Tolysin), and Sodium Salicylate, J. Pharmacol. & Exper. Therap. **48:** 341-357 (July) 1933.

8. Willcox, Sir William: Toxic Jaundice, Lancet **2:** 1-6 (July 4), 57-63 (July 11), 111-117 (July 18) 1931.

9. Reichle, H. S.: Toxic Cirrhosis of the Liver Due to Cinchophen, Arch. Int. Med. **44:** 281-288 (Aug.) 1929.

in which recovery occurred the condition was diagnosed as "catarrhal jaundice," since it is frequently difficult to elicit the history of cinchophen medication or to relate the time of the appearance of symptoms to the medication.

The following two cases are reported to emphasize the dangers of cinchophen medication in patients not known to have an idiosyncrasy to the drug and as a plea against the use of a drug so toxic in the treatment of relatively innocuous conditions such as the common cold. The histories given by one of the patients, a graduate nurse, and by her husband, a physician, about herself and about their son, give these case reports a sharp definition comparable to a laboratory experiment.

## REPORT OF CASES

CASE 1.—Feb. 13, 1939, a 37 year old married woman, a graduate nurse and the wife of a physician, entered Barnes Hospital complaining of nausea, vomiting and jaundice which had been present for about two weeks. She had severe pains in the right upper abdominal quadrant. The stools had been clay colored for about two weeks, and she had experienced some itching of the skin. The pain had at times been severe enough to require one-fourth grain (0.016 Gm.) of morphine by hypodermic injection for relief. Her appetite had been exceptionally poor throughout the present illness. For several years previously the patient had experienced mild gastrointestinal attacks and had lost some weight (her weight dropped from 165 to 139 pounds, or from 75 to 63 Kg.), but she was still moderately well nourished.

Her physical examination on entry revealed generalized icterus. The nutritional state was good. The blood pressure was 92 systolic, 58 diastolic. Examination of the head, eyes, ears, nose and throat disclosed nothing remarkable. No abnormalities were noted on examination of the heart or lungs. There was definite tenderness in the right upper quadrant of the abdomen. The liver edge was not palpable. The spleen could not be felt. The extremities were normal in appearance. The reflexes were physiologic. The temperature was 36.5 C. (97.7 F.) and the pulse rate was 75.

The red blood cell count was 4,460,000; the hemoglobin level was 89 per cent, and the white blood cell count was 5,800. The Schilling differential count was as follows: stab cells 2, segmented forms 51, lymphocytes 42 and monocytes 5. The Kahn reaction of the blood was negative. The icterus index was 55. The prothrombin time was 35 seconds. The stool showed no bile. There was a large amount of bile in the urine. The patient was treated with dextrose given intravenously in large amounts and vitamin K and bile salts by mouth. The icterus index gradually fell to 17.5, and the prothrombin time was somewhat shortened. February 22 operation was performed with the expectation that a stone in the common duct would be found. Inspection and palpation of the duodenum revealed definite evidence of a duodenal ulcer just beyond the pylorus. The gallbladder was not the site of acute inflammation and no stones could be felt in it or in the common duct. The liver appeared entirely normal except that it was unusually firm. The common duct was so small that it was not explored, but instead an opening in the cystic duct was made and the common duct explored through it. The gallbladder was removed in the usual manner. After removal it was found to exhibit no abnormalities and to contain no stones. After the operation the patient was questioned about the ingestion of drugs which might have resulted in the toxic hepatitis. The only medicament that she had been taking was a preparation called guaiasin furnished by the S. E. Massengill Manufacturing Company. She was uncertain about how many of the guaiasin capsules she had taken. The medicament had been taken on the advice of a drug "detail man" to relieve colds. She had taken four or five capsules about January 1. Her jaundice did not appear until about February 1. The description of the drug on the label was "Guaiasin is the Guaiacol Ester of Phenyl-Cinchoninic Acid, a chemical combination of Cinchophen and Guaiacol." It was stated on the label that "Especial caution is necessary in the presence of renal insufficiency and impaired hepatic function." Each yellow and black capsule contained 5 grains (0.3 Gm.) of the compound. The recommended dose was "1 or 2 capsules two or three times daily after meals with plenty of water, or as determined by the physician."

February 28 a galactose tolerance test gave 2.1 Gm. excretion, which was interpreted as indicating moderate impairment of liver function. March 1 the hippuric acid test of liver function gave 1.3 Gm. excretion of conjugated benzoic acid, which was interpreted as definite evidence of liver damage, the normal minimum being 3 to 3.5 Gm. The patient's jaundice remained throughout her hospital stay, the icterus index remaining at a level of about 20. She was given 1,000 cc. of a 10 per cent solution of dextrose intravenously twice daily. A careful study of the blood revealed no hematologic disorder. The patient was discharged from the hospital March 5 to continue treatment at home. She was still jaundiced and suffering from severe anorexia. The diagnosis was toxic hepatitis probably due to cinchophen.

CASE 2.—March 3, 1939, we saw the patient's 10 year old son at the request of his father. The boy was deeply jaundiced and his liver was greatly enlarged, extending 2½ inches (6 cm.) below the costal margin. He was active and did not feel ill. Approximately five months previously he had begun receiving guaiasin capsules for colds. The usual dose had been three capsules given over a period of twenty-four to forty-eight hours. The medication was repeated at intervals of weeks whenever he seemed to be getting a slight cold. There had been an interval of several weeks before his last ingestion of the capsules on or about March 1, when he had one and one-half capsules. He had received a total of from fifteen to eighteen capsules in the previous five months. The jaundice appeared March 2. Since the boy's father was a physician, the situation was fully explained and it was advised that the boy be taken home, watched carefully, and given a very high carbohydrate diet. After his return home he felt so well that he was allowed to go to school until March 8, when his father discovered him unconscious in his bed. March 9 he was brought to the St. Louis Children's Hospital. He was deeply icteric and comatose. The liver was no longer palpable. By percussion it seemed to be very small, tympany extending high above the costal margin. The decrease in the size of the liver as compared to the greatly enlarged liver that was noted only six days previously was extreme and dramatic.

The icterus index was 170. The blood sugar value was 38 mg. per hundred cubic centimeters. Other blood chemistry studies were within normal limits. On examination the spinal fluid was normal. The boy did not regain consciousness. He was treated with constant intravenous infusions of dextrose and lactate-Ringer's solution and was given feedings through a stomach tube. He died March 12.

Postmortem examination revealed acute yellow atrophy of the liver. There were extreme ascites, bilateral hydrothorax and hydropericardium. The liver weighed 460 Gm. as compared with the normal weight for the patient's age of 850 Gm.

The amounts of the drug taken in these two cases were very small. Each of these patients, however, had received repeated small doses at intervals of some weeks over a period of approximately five months. No doubt seems possible concerning the cause of the liver damage in both instances. In these cases, as in many others which have been reported, there was nothing to suggest a special idiosyncrasy to the drug. Neither patient had exhibited at any time any allergic type of cutaneous response. In the mother's case allergy could be ruled out since the symptoms did not appear until weeks after the last dose. In the boy's case an allergic explanation is unlikely, since he had repeatedly taken small doses of the drug without symptoms.

Barbour and Fisk [7] believe that under certain conditions liver damage is a constant and inevitable result of cinchophen administration. Repeated administration after an interval would seem to be one of the conditions, as noted by Sugg [6] and Palmer and his co-workers [3]

and in the cases reported here. The appearance of acute toxic necrosis of the liver, such as was found in the boy's case, has been repeatedly described, and, as in his case, the clinical picture of portal obstruction with ascites may be present as described by Beaver and Robertson.[10]

It is important to note that in the mother's case, although no previous symptoms had been experienced suggesting peptic ulcer and gastrointestinal roentgenograms taken a few months previously had shown no lesion, a peptic ulcer was found at operation. Bollman, Stalker and Mann[11] found that feeding cinchophen will produce chronic peptic ulcer in nearly all dogs, usually single and on the posterior wall of the pyloric region. Simonds[12] found that typical and severe gastritis occurs in dogs within twenty-four hours after the initial cinchophen feeding. Following the development of the gastritis, peptic ulcers appear. It may be that the ulcer as well as the toxic hepatitis in this case was caused by the ingestion of cinchophen.

In the mother's case, as has been previously noted in many instances, the initial inquiry failed to reveal the history of cinchophen medication. Patients are frequently unaware of the nature of the medicament they have obtained from physicians or purchased at drug stores for use as mild analgesics or in the treatment of colds. In many cases, therefore, the history of chronic pain or frequent upper respiratory infections with drug treatment of unknown nature may indicate the probability of cinchophen medication.

Warnings not to take cinchophen when known liver damage exists are useless. Cinchophen seems to be highly toxic to many persons for whom there is no reason to suspect any hepatic impairment. Likewise patients and physicians are usually unaware whether or not in any individual patient there has been any liver damage. The question of why more patients do not give clinical evidence of liver injury after the administration of cinchophen and its derivatives has been repeatedly raised. Apparently the best explanation is that certain patients are more susceptible than others but that large doses or repeated doses of cinchophen given at intervals probably always cause some liver damage. Because of the extremely great reserve powers of the liver, mild and moderate degrees of liver damage are probably seldom recognized clinically. It is only when an extremely large percentage of the liver parenchyma is incapacitated that the toxic signs become evident.

SUMMARY

In two cases severe liver damage followed medication with a compound of guaiacol and cinchophen, in one of them resulting in fatal acute yellow atrophy. It has not yet been determined whether this particular cinchophen compound is more toxic than cinchophen itself. A duodenal ulcer, possibly produced by the cinchophen, was found at operation in one case. I was unable to find any previous reports of ulcers caused by cinchophen in the human being, although peptic ulcers have been so produced in experimental animals. Cinchophen medication is dangerous. The use of this drug is inadvisable, especially in the treatment of such relatively innocuous conditions as the common cold.

600 South Kingshighway Boulevard.

10. Beaver, D. C., and Robertson, H. E.: The Specific Character of Toxic Cirrhosis as Observed in Cinchophen Poisoning: Review of Five Fatal Cases, Am. J. Path. **7:** 237-258 (May) 1931.

11. Bollman, J. L.; Stalker, L. K., and Mann, F. C.: Experimental Peptic Ulcer Produced by Cinchophen, Arch. Int. Med. **61:** 119-128 (Jan.) 1938.

12. Simonds, J. P.: Mode of Origin of Experimental Gastric Ulcer Induced by Cinchophen, Arch. Path. **26:** 44-50 (July) 1938.

# EXPERIENCE WITH COBRA VENOM IN THE ARTHRALGIAS AND RELATED CONDITIONS

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NEW YORK

Pain is the most common complaint in arthritis, neuralgia and related conditions. These ailments at times may be dominated by discomfort so intractable as to subordinate all other considerations until symptomatic relief is provided for the patient. Failure or delay of the clinical measures in giving adequate comfort in such situations presents a not infrequent and difficult therapeutic problem.

The relief of pain in arthralgia and neuralgia for these reasons has been the subject of investigation in our clinic for several years. The current interest in the use of venoms for relief of pain, particularly in rheumatic disease, leads us to publish this preliminary report on our therapeutic experience with cobra toxin. Our studies are continuing and will in time cover the treatment of a larger group of patients than are represented here. Among other remedies, we have observed the effects of copperhead and rattlesnake extracts. These substances were in the early stages of development at that time and we found that they had received insufficient experimental study to warrant further clinical use.

The report of Macht[1] on the use of cobra venom in a variety of painful conditions which included favorable results in two cases of tic douloureux, ten of other neuralgias and "ten cases of chronic arthritis who could not be relieved except by narcotics" led us to add to our studies the effects of that substance in painful rheumatic and related disease. In the group mentioned by Macht, the types of arthritis and neuritis were not indicated. As far as we know, only a few other publications on the clinical use of snake venom in arthritis have appeared at this writing. Ferri[2] briefly reported uniformly satisfactory results in one case of "chronic arthritis" and in three cases of sciatica treated with from one to three injections of viper extract. While administering cobra and viper venom to subjects suffering from painful carcinomas of the breast, Körbler[3] noticed an "appreciable relief" of pain in the osteo-arthritic hip of one patient.

The most extensive experience with snake venom in rheumatic disease was summarized by Burkardt,[4] who employed viper extract intracutaneously for sixty-four patients receiving a total of 1,682 treatments. Of seventeen patients with neuralgia—sciatic, intercostal, cervical, occipital and trigeminal—almost all experienced considerable or complete alleviation "in a short period

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Dr. I. Jerome Silverman, clinical pathologist to the outpatient department, cooperated with the authors in the laboratory work required. The cobra venom for this study was made available by Dr. D. I. Macht and was supplied by Hynson, Westcott & Dunning, Inc., Baltimore.

1. Macht, D. I.: Therapeutic Experiences with Cobra Venom, Ann. Int. Med. **11:** 1924 (April) 1938.

2. Ferri, G.: L'azione analgesica del veleno vipernio, Gior. ital. di anest. **1:** 588, 1935.

3. Körbler, J.: Schmerzlinderung bei Krebskranken durch Schlangengift, Klin. Wchnschr. **13:** 1185 (Aug. 18) 1934.

4. Burkardt, Albrecht: Die Behandlung der rheumatischen Erkrankungen mit Schlangengift, Deutsche med. Wchnschr. **61:** 1159 (July 19) 1935.

of treatment." Among those with chronic rheumatoid arthritis ("primary chronic arthropathy") "three fourths of them showed constitutional improvement as well as in the joints locally, with decreased swelling and pain —and with an essential reduction of the erythrocyte sedimentation rate." Several patients suffering attacks of acute inflammatory arthritis were freed from pain by three or four injections.

In a number of cases of "secondary chronic arthritis," he noted, the results were too insignificant and the number of cases too few for any conclusions. Retrogression of joint swelling and significant relief of pain were striking in specific infectious arthritis, gonorrheal and tuberculous. In four cases of spondylitis of the Bechterew type (Marie-Strümpell disease), increased mobility and relief of pain were derived. In addition, three of these showed a lowered sedimentation rate. No detailed analysis as to the severity of the various conditions or as to the degree of response was offered by the author.

Snake venoms have been put to a number of empirical uses for some time, but the cobra substance has been employed so far chiefly for the relief of pain in malignant conditions [5] and to a lesser extent for the control of discomfort in tabetic crises,[6] in angina pectoris [7] and in the Parkinson syndrome.[8] Macht's [9] studies of the physiologic and pharmacologic effects of cobra toxin in animals and in man have contributed in great part the experimental basis for its clinical use. He has also developed a practical technic of preparation and biologic assay of the therapeutic material which is extracted from the dried scales of the Indian or African cobra.

The quantity of cobra toxin solution required to kill a mouse weighing 24 Gm. within eighteen hours after intraperitoneal injection constitutes a mouse unit. Such a highly diluted preparation has very slight toxic action in human beings. Five mouse units has been adopted as the standard average intramuscular dose, but much larger quantities have been administered by us and by others without harmful results. Macht [10] has shown that cobra venom does not act as a local anesthetic and does not appear to affect the nerve fibers or nerve trunks in animals when applied locally. Cobra venom injected into animals in his pharmacologic studies acted antagonistically to certain drugs producing cerebral convulsions. As a result of his investigations Macht [11] concluded that cobra venom relieves pain in much the same way as morphine, by an effect on the cerebrum, without exerting similar narcotic effects.

## METHOD

Patients with painful conditions attending the Arthritis Clinic at Bellevue Hospital, Fourth Division, were selected for our study. Almost all the patients had already failed to obtain adequate relief from other therapy, such as antirheumatic drugs, sedatives, local applications, physical therapy and in a few cases even codeine. Some were placed on cobra venom therapy at once. Others were given a course of physiologic solution of sodium chloride to make a control group available. The treatment of some of the patients receiving cobra venom and showing improvement was interrupted, without their knowledge, and physiologic solution of sodium chloride was substituted to determine the veracity of the previous response. The estimate of the severity of the patient's condition and the degree of improvement, if any, was made by the same observers throughout this study, according to table 1.

The cobra extract was administered at first, as recommended by Macht,[1] in 1 cc. or 5 mouse unit doses intramuscularly given daily or every second day at the start of treatment. It soon became apparent that this amount of drug in arthritic conditions was too mild to produce the rapid or satisfactory analgesia reported by others.[12] The dose was therefore increased to 2 cc., or 10 mouse units, following an initial injection of 1 cc. to ascertain tolerance. It was agreed, from the experience of Macht and others, that ten injections, or 50 mouse units, were to be considered the minimum standard trial series for eliciting any notable clinical effect. Failure to provide some comfort with that amount of material was to be charted as a negative result. In all cases in which there was no relief, in fact, we did administer much more venom to make sure that both the medication and the patient had been permitted a fair opportunity.

TABLE 1.—*Criteria*

| Severity | | Results | |
|---|---|---|---|
| 1+ | Diffuse pain; no tenderness | Relief of pain and disability, subjective | 1+ |
| 2+ | Diffuse pain; overlying tenderness | Same with relief of insomnia | 2+ |
| 3+ | Localized pain and tenderness; limited mobility | Subjective relief and reduced tenderness and disability | 3+ |
| 4+ | Localized pain and tenderness; insomnia; narcotics; disability | Same with complete subjective and objective relief | 4+ |

The treatments were given, whenever possible, daily for from five to ten days. The first injection always consisted of 1 cc. (5 mouse units) intramuscularly, after which from 5 to 10 mouse units in 1 or 2 cc. became the steady dose, according to the severity or responsiveness of the condition. When the subjective and/or objective improvement persisted during a period of three or four injections the dose was reduced or the interval between injections was gradually lengthened, so that the patients received treatments three times or twice a week and, finally, once a week. After from two to three weeks of steady complete relief, the venom was discontinued. The sites of injection were alternated regularly between the deltoid areas and the upper, outer gluteal quadrants. To avoid any disturbing mental suggestion, the cobra venom was always designated or discussed as preparation no. 77 for the 5 mouse unit ampules and as no. 78 for the specially prepared 10 unit ampules. The saline solution was called N. S. When a patient had taken oral medication regularly, possible contrary effects from the sudden interruption of a therapeutic ritual were avoided by prescribing a simple syrup in the usual dose in addition to the intramuscular inoculations.

When patients were given saline solution and the symptoms went unrelieved for from two to three weeks, venom was substituted. In some of those first treated

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9. Macht, D. I.: Experimental and Clinical Study of Cobra Venom as an Analgesic, Proc. Nat. Acad. Sc. **22:** 61 (Jan.) 1936.

10. Macht, D. I.: Action of Cobra Venom on the Nervous System, Am. J. Physiol. **113:** 90 (Sept.) 1935.

11. Macht, D. I.: Comparison of Cobra Venom and Morphine as Analgesics, Am. J. Physiol. **116:** 101 (June) 1936.

12. Macht.[1] Ferri.[2] Körbler.[3]

with venom, as we have stated, the cobra material was later replaced with saline solution. A small number received only either venom or saline solution.

## RESULTS

In order to determine as accurately as possible the effectiveness of the cobra material, the symptoms and signs before treatment and the response to therapy as reported by the patient and as evidenced by examination were graded according to table 1.

Nine patients with rheumatoid arthritis received control therapy with injections of saline solution. None of these patients were benefited. Thirteen of the fourteen patients with rheumatoid arthritis were given venom with slight to moderate improvement in eleven. Four of these patients showed marked symptomatic relief. Two of the group with rheumatoid arthritis were not helped by a total of from 90 to 150 mouse units. Both of these patients suffered from Marie-Strümpell disease, and we have included them among those with rheumatoid disease. A third patient with this ailment reported slight comfort resulting from 195 mouse units. The relief of complaints with the cobra extract was surprisingly more impressive in the group

TABLE 2.—*Summary of Results*

| | Saline Solution | | | Venom | | | |
|---|---|---|---|---|---|---|---|
| Classification | No. of Patients | Slight Moderate Improvement | Unimproved | No. of Patients | Slight Moderate Improvement | Unimproved | Total Patients |
| Osteo-arthritis | 17 | 4 | 13 | 23 | 17 | 6 | 24 |
| Rheumatoid arthritis | 9 | 0 | 9 | 13 | 11 | 2 | 14 |
| Fibrositis | 5 | 1 | 4 | 13 | 2 | 11 | 14 |
| Neuralgia | 5 | 2 | 3 | 12 | 6 | 6 | 13 |
| Totals | 36 | 7 | 29 | 61 | 36 | 25 | 65 |
| Percentage | | 19.4 | 80.6 | | 59.01 | 40.9 | |

with rheumatoid arthritis than in the group with other conditions reported here.

Of twenty-four patients with osteo-arthritis, seventeen were given a course of saline solution intramuscularly with slight to moderate relief claimed in four cases but without response in thirteen. Twenty-three patients in the osteo-arthritic group were subjected to cobra therapy with slight to moderate benefit in seventeen but with no effect in six others. The osteo-arthritic patients who received venom, therefore, showed a much higher frequency of symptomatic improvement than did those given saline solution.

Of fifteen patients with fibrositis, five received injections of saline solution. The complaints of four of these patients were unchanged, but the fifth reported slight relief. Cobra venom was administered to thirteen fibrositic subjects with slight to moderate improvement in only two, the other eleven apparently remaining uninfluenced. The results from the use of cobra venom in fibrositis were distinctly poor by comparison with the small control group receiving saline solution. It must be remembered, however, that "fibrositis" at the present time, as a diagnostic classification, embraces a heterogeneous group of complaints referred to the soft tissues, often probably arising from a psychic rather than a pathologic basis. Failure of the reptile extract in several of these cases in which there were elevated sedimentation rates and signs of definite organic involvement, however, suggests so far a real ineffectiveness in these diffuse pains compared to the results in the sharply localized discomfort of arthritis.

Of thirteen patients with neuralgia five received saline solution, with slight to moderate improvement in two but with no effect in three. Twelve patients in this group were given the cobra injections, from ten to thirty doses, with slight to moderate comfort in six but with no relief in the other six. The comparative value of the venom in this small group is equivocal. Unfortunately, all but two of these patients presented neuralgic syndromes of long standing. The condition of two of the patients was acute and the anodynal action of the venom appeared definite in one of these after thirteen injections but only slight, if at all, in the other after eighteen treatments. The first patient's pain for three weeks previously had not been eased by from 80 to 100 grains (5 to 6.5 Gm.) of antirheumatic medication and 2 grains (0.13 Gm.) of codeine daily. The second patient required three weeks of almost daily treatment before slight relief occurred.

While the group of sixty-five patients treated is a sizable one as a whole, we realize that each of the individual syndromes was represented by a limited number of cases. As a preliminary study, however, we feel that enough patients were treated and followed to justify our reporting these observations to assist in further investigation elsewhere. Of the total number of sixty-five subjects (table 2), thirty-four were given control courses of saline solution. Seven, or 19.4 per cent, of the latter patients reported or demonstrated slight to moderate improvement, while twenty-nine, or 80.6 per cent, were not helped. On the other hand, of sixty patients to whom venom was administered, there were thirty-six, or 59.01 per cent, who showed slight to great symptomatic relief, while twenty-five, or 40.9 per cent, of these patients were unaffected. The benefit from venom therapy appeared to be three times as frequent as that elicited from injection of saline solution. There were three patients whose pain and disability were said by them to have disappeared entirely while receiving cobra toxin. About one third of those benefited by this substance were only slightly helped, usually subjectively, the others experiencing moderate improvement.

## REACTION AND RESPONSE

The venom, like the saline solution, was injected intramuscularly. Often there occurred a slight local soreness where the cobra material was deposited, lasting for several hours, accompanied occasionally by swelling, which now and then persisted for a few days. The local discomfort was only rarely severe enough to require the application of heat and counterirritants. In most of our cases the 2 cc., 10 mouse unit, dose was administered with practically little more local reaction than half that amount provoked. In three cases, for investigative as well as for anodynal purposes, as much as 3 cc. was injected daily or every second day. In one of these cases developed what was evidently a chemical abscess requiring incision and drainage and yielding a negative bacteriologic culture. We are avoiding, therefore, any greater single intramuscular dose than 2 cc., or 10 mouse units.

There were no definitely adverse systemic reactions observed by us following cobra venom. Some patients were purposely maintained for as long as three or four months on regular injections of the medication without untoward effect or evidence of cumulative action. One

woman complained of nausea occurring regularly after the injection of venom, but she was not sufficiently troubled by this alleged effect to wish to discontinue the medication. Another patient reported a violent stomach upset with vomiting after each of three injections of the cobra extract. Unknown to her, saline solution was substituted, and a similar complaint was made after each of two such injections.

Several patients with multiple joint or muscle symptoms reported relief at some sites following injections of venom, yet failure of the remaining involved areas to respond. An example of this type of reaction was a case of combined arthritis, the symptoms consisting chiefly of pain and limited mobility of the shoulders, arms and fingers. After the first course of ten doses the complaints had disappeared excepting in the right fourth finger, which was swollen and showed destructive changes in the digital joints with the usual spindle-shaped deformity of chronic, active, advanced rheumatoid arthritis. The patient remained free of her discomfort everywhere excepting in that finger throughout three courses totaling thirty injections.

Several of the arthritic patients with associated hypertensive, cardiac or diabetic states had no apparent exacerbation of these complications from the venom therapy. Many of the patients in our series had repeated urinalyses done during the period of venom treatment without abnormalities being detected. The erythrocyte count and hemoglobin content did not present any definite changes. Of four patients who had complete blood counts performed within a few hours after they received injections of cobra extract, one showed moderate leukocytosis (12,500 white blood cells). The nonfilament count and the sedimentation rate were uninfluenced by treatment even when symptomatic benefit occurred. In several cases showing an elevated sedimentation time when venom treatment was begun there was no appreciable change in this disease index after long courses of injections. When the sedimentation rate was normal, the test was not repeated as a routine, but in a number of such situations when the rate was checked during or at the end of therapy the sedimentation time remained at about the same low level. Some of these results are listed in table 3.

A few patients suffered exacerbations of pain although they were in the midst of a course of cobra therapy at the time. The good effects of the snake extract were in no instance apparent before at least five injections had been administered, and usually from eight to ten treatments of the 10 unit dose were required for any benefit to be admitted or noticed. In the dosage used, twice the amount so far recommended, the material evidently cannot be substituted for the predictable, rapid analgesia of a narcotic, nor does the toxin seem to act uniformly as to degree and time in cases presenting approximately similar involvement.

The benefit recorded by us refers almost in every instance to subjective relief. In a small number of cases stiffness and limited mobility were found to be improved along with discomfort as the patients reported. It is interesting to note that a number of the patients who benefited from venom had their treatment interrupted. Injections of saline solution were substituted without their knowledge, only to be followed shortly by a definite recurrence of previously improved symptoms. Only a small number of patients with swollen joints presented themselves during the period covered here. There was no noticeable effect of injection of the cobra material on their articular enlargement, even when the pain was said to have been relieved. Three patients with neuralgia who failed to respond to venom were moderately or completely relieved by procaine block. When the injections of venom were discontinued, in all but a few instances there followed a recurrence of symptoms within a short period.

## SUMMARY AND CONCLUSIONS

1. Of a group of sixty-five patients, thirty-six received injections of saline solution from two to five times a week; sixty-one were treated with cobra venom intramuscularly at similar intervals; of those given saline solution, seven (19.4 per cent) showed slight to moderate symptomatic relief, but the condition of twenty-nine (80.6 per cent) failed to respond; of the group receiving venom, thirty-six (59.01 per cent) were slightly to moderately benefited while the condition of twenty-four (40.9 per cent) was uninfluenced.

2. In the separate types of rheumatic disease treated in this series, of fourteen patients with rheumatoid arthritis, nine received control therapy of saline solution without relief in any, whereas of thirteen getting cobra injections eleven appeared to have slight to moderate improvement. Three of these patients suffered from Marie-Strümpell disease and in two instances were not benefited by venom, while the third patient reported slight relief of discomfort. Of twenty-four patients with osteo-arthritis, seventeen were given saline solution with slight to moderate benefit in four and without effect in thirteen. Of twenty-three patients with osteo-arthritis to whom venom was administered,

TABLE 3.—*Some Blood Counts and Erythrocyte Sedimentation Rates Before and After Injection of Cobra Venom*

| Case | Dates | Total White Blood Cells | Non-filament Count | Red Blood Cells | Hemoglobin, % | Sedimentation Rate (Cutler) | Number of Injections |
|---|---|---|---|---|---|---|---|
| 1 | 1/30/39 | 8,300 | 18 | 5,100,000 | 77 | 9 | |
| | 3/11/39 | 9,350 | 37 | 6,000,000 | 80 | 12 | 16 |
| 2 | 3/30/39 | 8,100 | 16 | 4,350,000 | 77 | 16 | |
| | 6/10/39 | 8,500 | 28 | 4,600,000 | 73 | 23 | 30 |
| 3 | 2/28/39 | 8,100 | .. | 4,000,000 | 85 | 7 | |
| | 4/ 1/39 | 6,800 | | | | | |
| | 5/ 6/39 | 8,800 | 23 | 5,900,000 | 75 | 9 | 24 |
| 4 | 5/15/39 | 6,700 | 18 | 4,250,000 | 75 | 9 | |
| | 6/10/39 | 9,000 | 24 | 5,000,000 | 81 | 8 | 13 |
| 5 | 3/19/39 | 8,300 | 26 | 4,400,000 | 92 | 9 | |
| | 5/12/39 | 9,600 | 36 | 4,200,000 | 71 | 14 | 22 |
| 6 | 6/10/39 | 5,050 | 20 | 4,100,000 | 96 | 10 | |
| | 7/22/39 | 5,450 | 26 | 4,800,000 | 84 | 10 | 16 |
| 7 | 7/ 8/39 | 8,300 | 18 | 4,700,000 | 84 | 8 | |
| | 7/29/39 | 5,750 | 23 | 4,600,000 | 81 | 8 | 12 |
| 8 | 7/ 8/39 | 11,300 | 37 | 5,400,000 | 82 | 9 | |
| | 7/22/39 | 7,100 | 44 | 5,000,000 | 84 | 12 | 12 |
| 9 | 2/18/39 | 5,000 | 43 | 4,300,000 | 96 | 6 | |
| | 6/24/39 | 6,400 | 23 | 4,500,000 | 80 | 4 | 44 |
| 10 | 2/21/39 | 7,500 | 22 | 4,200,000 | 73 | 14 | |
| | 6/10/39 | 5,200 | 28 | 4,400,000 | 80 | .. | 40 |
| 11 | 6/ 7/39 | 6,100 | 18 | ..... | .. | 7 | |
| | 7/18/39 | 6,300 | 38 | 4,500,000 | 88 | 8 | 20 |
| 12 | 2/28/39 | 9,400 | .. | ..... | .. | 27 | |
| | 4/ 1/39 | 12,100 | .. | ..... | .. | 27 | 28 |
| 13 | 3/ 9/39 | ..... | .. | 4,010,000 | 68 | 29 | |
| | 4/29/39 | ..... | .. | ..... | .. | 31 | |
| | 6/13/39 | ..... | .. | 4,600,000 | 80 | 32 | 28 |
| 14 | 2/ 7/39 | ..... | .. | 4,250,000 | 75 | 23 | |
| | 4/ 3/39 | ..... | .. | 4,500,000 | 63 | 25 | 18 |
| 15 | 2/12/39 | ..... | .. | ..... | .. | 15 | |
| | 3/14/39 | ..... | .. | ..... | .. | 16 | 22 |

seventeen derived slight to moderate improvement and six no relief. Of fourteen patients with fibrositis, five were subjected to control therapy of saline solution with slight benefit in one and in four without effect. Among thirteen patients with fibrositis injected with venom, only two felt slight to moderate improvement, while eleven reported that the symptoms were unchanged. There were thirteen patients with neuralgia, of whom five received saline solution, two of them showing slight to moderate relief and three no benefit. Twelve patients with neuralgic syndromes were given venom, six of these reporting no effect and the remaining six slight to moderate improvement.

3. In this preliminary study a small but suggestive group, particularly those with arthralgias, experienced some gradual but rarely complete relief of pain, and in a lesser number of cases improved mobility, during administration of cobra venom. Careful evaluation at this time indicates, on the whole, some limited effectiveness of cobra toxin as compared with controls treated with saline solution. As an added comforting measure, to tide patients over an intractable period of treatment in acute or chronic arthralgia or neuralgia, cobra venom in certain cases appears to offer some supplementary analgesic effect. Accurate determination of such therapeutic value requires further controlled investigation in a large series of the various rheumatic conditions.

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## PREVENTING TRAUMATIC COMPLICATIONS IN CONVULSIVE SHOCK THERAPY BY CURARE

A. E. BENNETT, M.D.
OMAHA

Convulsive shock therapy has been very enthusiastically endorsed by many workers and critically condemned by others. Its exact status as a permanent therapeutic agent in neuropsychiatry is yet to be determined. The follow-up studies after convulsive shock treatment of schizophrenic reaction types are not very encouraging, since relapses are frequent. Hypoglycemic shock therapy seems preferable. However, in chronic affective disorders of both the depressive and the manic types, the favorable sustained improvements from convulsive shock are more encouraging.[1] Midlife and presenile depressive states are terminated in the large majority of cases by convulsive therapy.[2] The cases of schizophrenia that respond best to this type of treatment are likewise admixture types with affective components.

For convulsive shock most workers use a convulsant dose of metrazol (pentamethylenetetrazol). Other convulsant drugs in use are triazol,[3] picrotoxin[4] and coriamyrtin.[5] Preliminary reports[6] indicate that all these methods are therapeutically effective.

One of the serious drawbacks to this therapy has been the occurrence of traumatic complications in the form of fractures of the spine and extremities.[7] This hazard is sufficiently serious, in spite of excellent obtainable results, that many workers have given up convulsive shock therapy. Insulin shock also carries this risk, but in lesser degree than other convulsant drugs.

Up to date, none of the measures advocated for prevention of fracture complications can be accepted as universally prophylactic. Various orthopedic restraint devices, hyperextension of the spine, preliminary insulin coma and even spinal anesthesia along with metrazol[8] give no constant assurance that fractures can be prevented. Preexisting pathologic conditions of the bone may explain the tendency to fracture in some instances, but the fundamental problem still remains; namely, the severity of the tonic muscular contraction producing skeletal fracture by direct muscle pull.

If shock treatment is to survive, the incidence of fracture complications must be reduced to a minimum. Since the fundamental cause of fracture complications is the severity of the muscular contractions occurring from the convulsive attack, the proper theoretical approach in prevention should be toward lessening the severity of the convulsion. The principle of curarization, or blocking the neuromuscular junction, seems to be the proper approach.

Since the time of Claude Bernard, curare (Indian arrow-poison) has been the ideal laboratory drug for blocking nerve impulses between the nerve fiber and the muscle. This peripheral motor paralysis in general affects nerve endings of all striated musculature. While systems other than the neuromuscular apparatus are undoubtedly affected to some extent, the chief action resulting in death is one of peripheral paralysis of the muscles of respiration. Cardiac muscle is relatively little affected until after asphyxia.

Curare has not as yet gained a definitely useful application in clinical medicine. Attempts from time to time have been made to apply the curarization principle in treatment of spasmodic disorders. West[9] reported partial success in tetanus. The most encouraging report is that of Burman[10] in infantile cerebral palsies, spastic pyramidal states and extrapyramidal rigidity states which are associated with involuntary movements, athetosis and tremor.

For the past six months I have been using curare at the Nebraska State Orthopedic Hospital on a large number of spastic paralytic children, with encouraging results similar to those reported by Burman. These observations, after convincing me of the safety of the

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drug, have pointed the way to its application in convulsive shock therapy of mental disorders.[11]

One of the reasons, I believe, for previous inconclusive clinical application of the drug has been inability to obtain a sufficient quantity of proved pure crude curare (authenticated curare).[12] Through the courtesy of Mr. Richard C. Gill, of New York, and E. R. Squibb & Sons, we were given the opportunity of standardizing a large quantity of the crude drug for experimental purposes.

### THE TECHNIC OF CURARIZATION PRELIMINARY TO CONVULSIVE SHOCK THERAPY

Either an infusion or an alcoholic extract from crude curare is prepared and the smallest lethal dose (per kilogram) for mice is determined. The lethal dose (different with each batch) is then determined; about one-tenth the lethal dose (per kilogram) is the beginning dose for human beings. The drug must be sterilized[13] and slowly injected intravenously or given intramuscularly. The active physiologic reaction of curarization is noted at about one-fourth to one-half the estimated lethal dosage.

When the physiologic dosage is reached, the physiologic effects noted immediately after intravenous injection and fifteen minutes after intramuscular injection are as follows: First, there is a subjective heaviness of the eyelids, then bilateral ptosis, slight nystagmus and strabismus with diplopia. Weakness of the muscles of the neck with inability to raise the head, loss of facial expression from weakness of the muscles, slow hesitant speech, weakness of the throat and jaw muscles rapidly follow. Next occur weakness to complete paresis of the spinal muscles, preventing the patient from raising himself, and, last, complete paresis of the arms and legs. These symptoms follow the same order as the progressive symptoms of a patient with myasthenia gravis. Double ptosis and nasal smile simulate the appearance of the myasthenic patient.

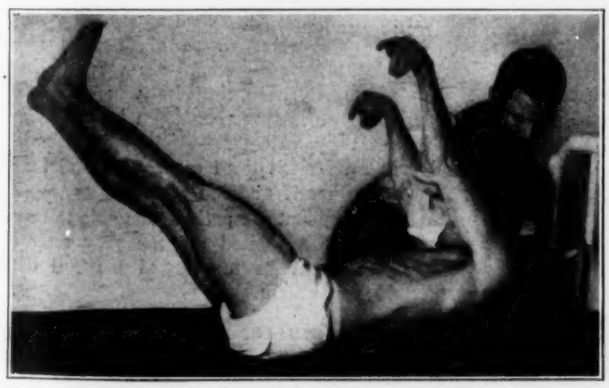

Fig. 1.—The patient in a straight metrazol convulsion.

When, within five minutes after the intravenous injection of curare, this effect is produced, the estimated convulsant dose of metrazol is given. I still hyperextend the patient's back by placing between the scapulas a firm folded blanket fastened on a pillow. Care must be used not to allow the patient's head to fall backward, as his neck muscles are powerless. The usual metrazol convulsion ensues immediately, but with very much less tonic and clonic contraction—no special precaution except tongue gag need be used.

By the time the patient regains consciousness the effects of curare have disappeared. Although patients are not able to thrash about after administration of metrazol, they should be watched carefully.

Fig. 2.—Same patient as shown in figure 1 after curarization followed by metrazol, illustrating the remarkable diminution of muscular contraction.

While we have not seen any side effects from the combination of the drugs except for a few instances of transient urticaria, nor any respiratory embarrassment, these should be watched for. Ampules of epinephrine and prostigmine should be available for injection as an antidote. If respiratory failure should occur, artificial respiration should be effective, since the excretion of the drug is rapid and the patient will spontaneously regain breathing power within a short time. It is doubtful whether respiratory failure need be feared unless too large a dose of curare is employed. The criterion to be followed is sufficient curare to paralyze the muscles of the neck and back. When the patient is unable to raise the head, sufficient motor paresis has been produced for metrazol to be given.

I have not noted any tendency to increased tolerance of curare on repeated injections. Neither am I sure that larger doses of metrazol are necessary to induce a convulsion after curarization. It may be wise to use a slightly larger dose of metrazol, however.

I have noted the same therapeutic effectiveness in depressive states by this combined method as from previous metrazol treatment. Curare in no way interferes with the therapeutic effect of metrazol. It may possibly allay somewhat the anxiety of the patient. So far, I have found that patients do not dread this convulsive shock as much as that from metrazol alone.

Figure 1 shows a patient in a straight metrazol convulsion. Figure 2 shows the same patient after curarization followed by metrazol, illustrating the remarkable diminution of muscular contraction.

I am convinced that fracture complications resulting from a metrazol convulsion in a properly curarized patient are almost impossible unless there is a serious pathologic condition of the bone.

### CONCLUSIONS

Aqueous or alcoholic extract of curare given parenterally in physiologic dosage sufficient to produce flaccid generalized motor paresis adequately protects the patient from traumatic complications of convulsive shock therapy.

11. These results, with more extended observation on combined curare and metrazol therapy, will be reported elsewhere.
12. Gill, R. C.: Curare, The Flying Death, Natural History, November 1935, pp. 279-292.
13. Dr. A. R. McIntyre, professor of pharmacology at the University of Nebraska College of Medicine, is now carrying out biologic standardization experiments, and a safe commercial preparation should soon be available.

So far, no danger or drawback to this combination treatment has been encountered. The therapeutic effectiveness of convulsive shock is still maintained.

Further experimentation is indicated before this procedure can be safely recommended for general psychiatric practice. More detailed experiences with this method will be reported elsewhere.

1204 Medical Arts Building.

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## Clinical Notes, Suggestions and New Instruments

### SEVERE CARBON MONOXIDE POISONING WITH PROLONGED COMA

#### FOLLOWED BY TRANSITORY PSYCHOSIS, PERIPHERAL POLYNEURITIS AND RECOVERY

EUGENE B. SANGER, M.D., BANGOR, MAINE
AND
WILLIAM L. GILLILAND, PH.D., ORONO, MAINE

Carbon monoxide poisoning of mild degree is usually followed by an uneventful recovery, but severe poisoning by this gas, when it results in profound and prolonged coma, often terminates fatally. There sometimes result severe disturbances of the sensorium, often of long duration, and in such cases there is often some impairment of motor function, from which recovery is generally much less rapid and less complete than from the purely mental symptoms. The case of carbon monoxide poisoning reported here is of interest, in view of its initial severity and the serious symptoms that immediately developed, because of the extraordinary degree of recovery that was finally attained. It seemed desirable to have a record of this unusual and comparatively rapid recovery from a condition leading generally to a much less favorable prognosis.

An unmarried professional man aged 27 was found with a companion in a parked automobile on the morning of Feb. 18, 1934. The estimated duration of exposure to carbon monoxide was about six hours, and another three hours elapsed before he was brought to the hospital. The companion was dead when found, which indicated the severity of the exposure to the gas. The windows of the car were closed, the engine had been left running, and later investigation revealed a leak in the gas heater with which the car was equipped.

On his admission to the hospital, physical examination showed the patient to be in profound coma; he was cold and clammy; there was extreme cyanosis of the face and extremities, and the lips were cherry red. The heart tones were of good quality. The lungs showed moist rales, and breathing was greatly labored. The abdomen was distended and tympanitic. There had been a profuse spontaneous diuresis before the patient was moved from the car. The pupils were widely dilated and reacted only slightly to light; corneal reflexes were absent. The only other neurologic feature of import was a bilateral Babinski sign.

Initial laboratory examination showed a white cell count of 55,600 with 17 per cent eosinophils; this was taken two hours after admission. On the following day the white cell count had dropped to 30,000. This was regarded as a favorable indication, as in Dr. Sanger's past cases an increase had meant ultimate death. Five days after the first count the leukocytes had dropped to 10,000 and the eosinophils to 1 per cent. At first the urine showed a few leukocytes and a few red blood cells to the high power field, and there was a trace of albumin. Four days later no abnormalities were observed in the urine. The Wassermann and Kahn reactions of the blood were both negative; the absorption spectrum of the blood was examined on the fifth day, and the absence of carbon monoxide at that time was demonstrated.

Lumbar puncture performed five days after admission showed nothing unusual except a slightly increased initial pressure.

For the first thirty-six hours after his admission to the hospital the patient remained in a profound coma. For the next thirty-six hours the coma was apparently less profound; the patient began to show some involuntary movements, moving his head and hands aimlessly. At this time he was also able to take fluids orally. On the following day a more noticeable restlessness developed; the patient opened and closed his eyes, snapped his fingers and threshed about in his bed; this behavior continued for nearly two weeks with but little change. Sixteen days after admission the patient rather abruptly regained consciousness and recovered his power of speech. Neuropsychiatric examination at this time showed a marked clouding of the sensorium. Attempts to converse with him elicited only brief, but not entirely pointless, remarks. Asked "What is your name?" he replied "Puttentain," a response suggestive of a childhood game which the patient had known. To other questions relative to his background he gave abusive retorts, as "Who the hell wants to know?" He showed no evidence of recognizing his mother or sister, with whom he had been living at the time of the accident, or other close relatives and friends. Questions relative to his physical condition brought a more adequate response; he complained of pains in legs and feet. During the days immediately following he was overtalkative and showed a marked flight of ideas. He was irritable, profane, obscene, combative, argumentative and extremely uncooperative. He showed an almost complete loss of memory for recent and remote events. He demonstrated some of the components of the parkinsonian syndrome in a marked degree; these consisted of pill rolling, drooling from the mouth and, to a lesser extent, the masklike facies. This condition was evident on the sixteenth day after exposure to carbon monoxide and persisted for over a month, disappearing gradually.

On admission to the hospital the patient was given oxygen and carbon dioxide by mask for thirty-six hours, until the cyanosis had appreciably disappeared; the finger nails still showed evidence of cyanosis three days after admission. Twelve ounces (350 cc.) of physiologic solution of sodium chloride was given by rectum every four hours during the first four days. After he had regained consciousness the patient suffered severe pains in the arms and legs, and was very voluble in his complaints about this condition. The toe drop on the right was noticed on examination of the limbs. The peripheral neuritis responded rather slowly to baking and massage, and except for mild paralysis of the muscles of the right foot, which was aided by a support, the patient made a complete recovery. He became oriented in all spheres, regained memory for remote and recent past events and returned to his normal mental level by the sixtieth day after admission. He was discharged seventy-seven days after admission, but he was unaware of the nature of his illness before this time. On being informed of the circumstances of the accident resulting in his illness he showed a normal concern for his dead companion and for the possible consequences to himself and his relatives.

About a year after the accident the patient was able to resume his professional activities in a limited way; a year after this he had so far recovered that he discharged his full duties without any noticeable impairment.

SUMMARY

A case of severe carbon monoxide poisoning showed the following items of interest:

1. A companion of the patient exposed to carbon monoxide for the same length of time died.

2. The patient remained in varying degrees of coma for twelve days.

3. After the coma the patient demonstrated transitory but marked symptoms of acute psychosis associated with parkinsonism.

4. There was severe peripheral polyneuritis followed by mild permanent paralysis of the muscles of the right foot.

5. Except for the paralysis of the right foot, the patient made a complete recovery, mentally and physically.

6. Five years after the poisoning the patient was found to be in excellent mental and physical health.

111 State Street, Bangor, Maine—Department of Chemistry and Chemical Engineering, University of Maine.

# Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

## ACCEPTANCE OF SUNLAMPS

After extensive investigation and inquiry, in collaboration with physicists and other scientists acting as consultants, and after due consideration [1] of the status of ultraviolet radiation therapy, the Council on Physical Therapy has adopted [2] and, until a more practical procedure is proposed, will use the erythemal reaction as a basis for judging the effectiveness of ultraviolet lamps for two important reasons: (1) In the case of exposure to intense sources of ultraviolet radiation it is a simple and practical means of preventing severe burns, and (2) in the case of weak sources of ultraviolet radiation it is an efficient safeguard against possible fraudulent sale of lamps that are deficient in ultraviolet radiation.

Physiologic experiments show that for practical purposes the wavelength of maximum erythematogenic action may be taken as the emission line of homogeneous radiation of mercury vapor at 2,967 angstroms, a wavelength present in many sources of ultraviolet radiation.

This emission line has an erythematogenic efficiency which may arbitrarily be placed at 100 per cent relative to the rest of the spectral erythemic response. No other wavelength or group of wavelengths has such a high efficiency in generating an erythema. Hence the emission line of homogeneous radiation at 2,967 angstroms is a natural standard for evaluating sources of heterogeneous ultraviolet radiation.

The intensity and the erythematogenic action of the emission line of mercury at 2,967 angstroms are easily evaluated in absolute units; and the erythemal action, as well as the radiometric output, of the heterogeneous ultraviolet radiation from various sources is readily correlated with this emission line as a standard.[3]

From direct experiments [3] it appears that a fifteen minute exposure to a flux density of 20 microwatts per square centimeter (or a total of 180,000 ergs) of homogeneous radiation of wavelength 2,967 angstroms does not produce an erythema on the average untanned skin, though it may be somewhat too intense for a blond skin.

The Council has adopted 10 microwatts [4] per square centimeter of homogeneous radiation of wavelength 2,967 angstroms as the erythemal unit (E. U.) of dosage intensity; [2] that is, 1 E. U. = 10 microwatts per square centimeter of radiation of wavelength 2,967 angstroms. Twice this value (20 microwatts, or 2 E. U.) is the minimum intensity for an exposure of fifteen minutes.

With 20 microwatts per square centimeter (2 E. U.) of homogeneous radiation of wavelength 2,967 angstroms as a standard of comparison, in the accompanying table are given the erythematogenic equivalents of the heterogeneous (the total integrated) ultraviolet radiation of wavelengths shorter than and including 3,132 angstroms required of various sources to produce a minimum perceptible erythema on the average untanned skin in fifteen minutes. For an exposure of sixty minutes the minimum permissible values for sunlamps are one fourth as large. That is to say, the total energy of unit intensity (20 microwatts per square centimeter) falling on a surface in fifteen minutes is the same as when one fourth the intensity (5 microwatts per square centimeter) is used and the surface irradiated sixty minutes, or four times as long. From this table it may be noticed that the lower the erythematogenic efficiency of the source, relative to the standard line at 2,967 angstroms, the greater must be the total ultraviolet intensity of wavelengths shorter than and including 3,132 angstroms in order to meet the Council's requirements.

The specifications of intensities given in the table are average values, observed in a 0-5 degree zone subtended by the center as the source; i. e., within a circle approximately 4 inches (10 cm.) in diameter, lying in a plane at right angles to the axis of the reflector, at the specified operating distance (24 inches, 61 cm.) from the front edge of the reflector. The specified intensities constitute the minimum values for therapeutic lamps accepted by the Council on Physical Therapy. The minimum intensities in microwatts per square centimeter for accepted sunlamps are one fourth of these values (those indicated by asterisk in the table).

### REQUIREMENTS FOR ACCEPTANCE OF SUNLAMPS AND REGULATIONS TO CONTROL ADVERTISING OF SUNLAMPS SOLD TO THE PUBLIC

In considering ultraviolet generators, the Council distinguishes between two general types, sunlamps and therapeutic lamps. The chief difference between the two is that the spectral radiation characteristics of acceptable sunlamps are such that they are suitable for home use without the supervision of a physician, whereas therapeutic lamps have spectral emission characteristics which necessitate professional supervision or control to avoid hazards of overexposure. Therapeutic ultraviolet lamps may be (1) for professional use only or (2) for patient use (prescription models) under the direction of the physician.

*Erythematogenic Intensities of Heterogeneous Ultraviolet Radiation from Various Sources Equivalent to 20 Microwatts per Square Centimeter of Homogeneous Radiation of Wavelength 2,967 Angstroms, Required to Produce a Minimum Perceptible Erythema*

| Source | Microwatts per Square Centimeter |
|---|---|
| Homogeneous radiation of wavelength 2,967 angstroms only (mercury vapor arc) | 20 |
| Sun: midday, midsummer, midlatitude, sea level | 91 |
| Carbon arc: blue flame, cored carbon, in reflector, no window | 48 |
| Carbon arc: glass window, opaque to 2,800 angstroms and shorter (estimated) | 90* |
| Mercury arc: Mazda, type S-1 lamp; high temperature arc in parallel with V-shaped tungsten filament; in glass bulb | 83* |
| Mercury Arc: Mazda, type S-2 lamp; similar to the S-1 lamp, but smaller; in glass bulb | 93* |
| Mercury arc: quartz capillary; type S-4; in glass bulb | 80* |
| Mercury arc: type G-5; low temperature, low voltage thermionic glow discharge; glass bulb | 108* |
| Mercury arc: high temperature, high vapor pressure, low voltage; quartz tube | 58 |
| Mercury arc: high frequency electrodeless discharge; quartz bulb | 60 |
| Mercury arc: low temperature, low vapor pressure, high voltage, "cold quartz," Geissler tube discharge | 36 |

* Lamps marked with an asterisk are acceptable as sunlamps.

To comply with the requirements for quality of radiation, the ultraviolet spectral energy distribution of a sunlamp shall be comparable, in biologic effectiveness, to the ultraviolet emission of natural sunlight (clearest weather, midday, midsummer, midlatitude, sea-level sunlight). The spectral range of wavelengths from sunlamps shall be limited largely from 2,900 to and including 3,132 angstroms and shall not include an appreciable amount of ultraviolet of wavelengths shorter than 2,800 angstroms.[5]

To comply with the requirements for minimum intensity, a sun lamp shall generate sufficient ultraviolet energy to produce a minimum perceptible erythema on the average untanned skin in not more than sixty minutes at a minimum acceptable operating distance of 24 inches. If the ultraviolet intensity is less than this, in the opinion of the Council the radiation is too weak to have any significant prophylactic effect against rickets.

1. Coblentz, W. W.: Ultraviolet Radiation Useful for Therapeutic Purposes, J. A. M. A. **98**: 1082 (March 26) 1932; **99**: 125 (July 9) 1932.

2. Acceptance of Sunlamps, J. A. M. A. **102**: 42 (Jan. 6) 1934.

3. Coblentz, W. W.; Stair, R., and Hogue, J. M.: Tests of a Balanced Thermocouple and Filter Radiometer as a Standard Ultraviolet Dosage Intensity Meter, Bur. Stds., J. Research **8**: 759, 1932 (R. P. No. 450, 10 cents).

4. In the metric system the numerical value of a unit is 1, 10, and so on. For convenience the Council uses the value 10 to conform with scientific usage instead of the value 20 (i. e., 2 × 10) noted in the text. The final result is the same.

5. More specifically, the energy of wavelengths shorter than and including 2,800 angstroms shall not exceed 1 per cent of the total energy of wavelengths between 2,804 and 3,132 angstroms.

In accepting sunlamps, the Council requires physical evidence of their production of energy from 2,800 to 3,200 angstroms in wavelength at an intensity which is adequate and safe for use by laymen. It has been demonstrated both clinically and experimentally that adequate ultraviolet energy between 2,800 and 3,200 angstroms plays an important role in deposition of calcium and may prevent rickets and may be an effective aid in promoting the soundness of bones and teeth. There is no warrant for the claim, however, that ultraviolet rays will insure normal tooth structure or that ultraviolet rays will prevent dental caries. Direct exposure of the skin to ultraviolet rays from the sun or from artificial sources results in the formation of vitamin D within the organism but the Council cannot recognize statements or implications that vitamin D has all the beneficial effects of exposure to sunshine. Advertising claims for sun lamps containing statements that exposure to ultraviolet radiation increases or improves the tone of tissues of the body as a whole, stimulates metabolism, acts as a tonic, increases mental activity or tends to prevent colds are not acceptable to the Council.

### WAPPLER TUBE-GAP RADIO KNIFE ACCEPTABLE

Manufacturer: Complex Division, American Cystoscope Makers, Inc., 1241 Lafayette Avenue, Bronx, New York.

The Wappler Tube-Gap Radio Knife is an electrosurgical unit providing either tube or spark-gap current. It is available in a portable or cabinet housing. Standard accessories include the following electrodes: blade, for dissection; loop, for excavation; smaller loop, for same purpose; needle, for coagulation, and a blade designed for ionization of the cervix. Complete with accessories, the portable unit weighs about 34 pounds. The cabinet model utilizes storage space in the subcabinet for a converter when only direct current is available. It weighs 90 pounds. Two types of unit are available of the cabinet size; one is operated by floor-switch, the other by manual control.

Wappler Tube-Gap Radio Knife.

Two independent electrical circuits are utilized, vacuum tube and spark-gap. Current is available for simultaneous cutting and coagulation, either in air, under water or in blood.

The following points about the unit were determined by the Council investigator: The spark-gap is fixed in the portable model so that alterations in power cannot be made. However, the spark-gap current is satisfactory for biterminal coagulation, either on needle or ball electrode. When used on a uniterminal connection it will also produce a milder form of coagulation. The cabinet models are provided with a control for regulating the intensity of the damped current.

The tube circuit supplies both dissecting and coagulating currents. The dissecting current can be varied by a control switch, allowing all grades of cutting from mild, slow dissection to powerful cutting, serviceable in wet places. The stronger grades of the dissecting current produce satisfactory coagulation, but as with any radiotube cutting current of high power there is a flamelike spark which carbonizes and produces some smoke. This is true when an arc exists between the active electrode and the tissues. This instrument is powerful enough to produce cutting currents either with a uniterminal or with a biterminal connection.

With the tube coagulating current, mild coagulating effects are obtainable using a uniterminal connection. With a biterminal connection, of course, the coagulating effects are greater. Here again there is some charring if an arc exists between the coagulating electrode and the tissue. However, with a ball electrode accurately approximated to the tissues, this tube coagulating current produces uniform, deep coagulation. One drawback in this circuit as well as in the gap-coagulating current in the portable model is that its intensity is fixed and cannot be varied for different operations except by jumping from heavy coagulation with a biterminal current to superficial coagulation with a uniterminal current. This is not true for the cabinet models. In the cabinet model, only the intensity of the tube coagulating current is fixed.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Wappler Tube-Gap Radio Knife for inclusion in its list of accepted devices.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE COUNCIL ACCEPTED SULFANILAMIDE, AND A STATEMENT OF ACTIONS AND USES AND OF DOSAGE APPEARED IN THE JOURNAL JULY 31, 1937, PAGE 358. A REVISED STATEMENT WAS PUBLISHED OCT. 30, 1937, PAGE 1454; A SECOND REVISION WAS PUBLISHED IN THE JOURNAL FEB. 25, 1939, PAGE 733. A GREAT DEAL OF WORK HAS BEEN DONE WITH THIS PRODUCT SINCE THAT TIME AND THE COUNCIL BELIEVED THAT A FURTHER REVISION WAS NECESSARY. THE COUNCIL, THEREFORE, AUTHORIZED PUBLICATION OF THE FOLLOWING REVISION OF THE DESCRIPTION AND VOTED INCLUSION IN NEW AND NONOFFICIAL REMEDIES 1940.

PAUL NICHOLAS LEECH, Secretary.

**SULFANILAMIDE** (See New and Nonofficial Remedies, 1939, page 463).

*Actions and Uses.*—Originally it was reported that sulfanilamide was active against infections produced by Lancefield's group A strains of hemolytic streptococci by virtue of an apparent specific effect on these organisms. It has since been shown that this drug has a much lesser degree of activity against infections of the tissues due to strains of Lancefield's group B hemolytic streptococci and that it has but a moderate degree of effectiveness in those infections produced by streptococci belonging to Lancefield's group C. The drug is valueless in enterococcic infections but has a definite chemotherapeutic activity in infections caused by the salivarius and mitis strains of the alpha hemolytic streptococci, provided the disease entity is not subacute bacterial endocarditis. Experimental and clinical evidence shows that sulfanilamide has a chemotherapeutic effect in infections produced by the meningococcus, gonococcus and Clostridium welchii, and that it is of value in the treatment of certain infections of the urinary tract, notably those due to Bacterium coli and Proteus vulgaris. The drug also has some degree of chemotherapeutic activity in the treatment of infections due to Brucella organisms, the virus of lymphogranuloma venereum chancroid and in certain stages of trachoma. Its value in the treatment of pneumococcic, staphylococcic and Friedländer's bacillary infections is less than that of sulfapyridine. The drug is not very useful in the treatment of typhoid or paratyphoid infections.

Although the exact mode of action of sulfanilamide on susceptible bacteria is still uncertain, experimental evidence indicates that at least one action of sulfanilamide (and possibly the only one of importance) is to render blood, spinal fluids, urine and other tissue fluids unfavorable as mediums for supporting the active multiplication of susceptible bacteria. In consequence, tissue invasion of these organisms may be prevented, production of toxic substances reduced, and the antibacterial mechanisms of the host permitted to complete recovery from the infection.

*Toxicity.*—No patient should be treated with sulfanilamide or sulfapyridine unless arrangements are made for daily attention by a physician. This is necessary because of the serious toxic effects of these drugs, which, while not frequent, are generally unpredictable in their occurrence and presumably have as their basis a peculiar idiosyncrasy. Many patients receiving sulfanilamide will have signs and symptoms of central nervous system disturbances such as headache, dizziness, nausea, vomiting, mild depressions or elations and, in a few instances, severe toxic psychoses. Because of these toxic manifestations, patients who are receiving the drug should be warned against driving automobiles, piloting or riding in airplanes, and from doing any heavy or dangerous work in which a spell of dizziness might result in a serious accident. Practically all individuals who receive therapeutic doses of the drug develop some degree of cyanosis, generally apparent in the lips and nail beds but which may suffuse through the entire integument. The exact mode of production of this cyanosis is unknown, although in many instances it is due, at least in part, to the production of methemoglobin in the blood. It is not, in the opinion of most observers, a serious complication and rarely serves as an indication that treatment should be discontinued. Drug fever, which generally occurs between the fifth and ninth days of therapy, is a not uncommon toxic manifestation. Rashes, which may vary markedly in their type and which may be accompanied by fever, are also not

infrequently seen in the course of sulfanilamide therapy. As these rashes are sometimes the result of a photosensitization of the skin, it is probably best for patients who are receiving sulfanilamide to keep out of the sun, and they should not receive ultraviolet irradiation.

Acidosis may be produced by the drug in certain individuals. The routine, concurrent use of sodium bicarbonate generally prevents this complication of drug therapy. Hepatitis, accompanied by jaundice and, in a few instances, ending fatally, is one of the rarer complications of sulfanilamide therapy. Acute hemolytic anemia, occurring from the third to the fifth day of therapy, is not uncommon and seems to happen more frequently in Negro patients than in white patients. A severe leukopenia may occur at any time during the course of therapy, and granulocytopenia has been described not uncommonly as a toxic manifestation. In patients who have a decrease in renal function the normal excretion of the drug is impaired, and an accumulation of sulfanilamide in the blood and tissues of the patient may occur if care is not taken in regulating the dosage of the drug.

It has been observed that patients who have had a severe toxic reaction in the course of the administration of sulfanilamide may, if the drug is given for a second time, develop an even more severe reaction. Hence the history of a previous toxic reaction to sulfanilamide constitutes in itself a most serious contraindication to the use of the drug.

As far as is known, practically all other drugs may be prescribed concurrently (but not in combination) with sulfanilamide. The only exceptions to this rule are the saline laxatives, because the development of sulfhemoglobinemia has been attributed by some observers to concurrent magnesium sulfate therapy.

*Dosage.*—The dose of sulfanilamide depends on the type and severity of the infection. As yet there is not a complete unanimity of opinion as to what constitutes the best system of therapy in the various diseases. It is suggested that in adults in cases of serious infections the dose be 1 Gm. (15 grains) every four hours for forty-eight hours and then from 0.5 Gm. (7½ grains) to 0.66 Gm. (10 grains) every four hours thereafter. It is to be remembered that the main index for the control of therapy with this drug should not be the dose of the drug which has been prescribed but rather the concentrations of sulfanilamide that are being obtained in the blood or other tissue fluids. Because of this, it is always desirable to determine the values for sulfanilamide in the blood and body fluids at frequent intervals by the method recently described by Bratton and Marshall (*J. Biol. Chem.* **128**:537 [May] 1939). It is usually advisable to continue therapy for a few days after clinical recovery has taken place in order to avoid relapses. Infants will tolerate the drug well, the dose being from one third to one half of the adult dose, while children require from one half to three fourths of the adult dose. Patients who cannot take the drug by mouth may be given subcutaneous injections of a 1 per cent solution of sulfanilamide made up in physiologic solution of sodium chloride or, better still, in one-sixth molar sodium racemic lactate solution. The same total dosage may be employed for parenteral as for oral administration, but the injections should be given at intervals of from six to eight hours.

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## SULFAPYRIDINE

THE COUNCIL ACCEPTED SULFAPYRIDINE AND A STATEMENT OF ACTIONS AND USES AND OF DOSAGE APPEARED IN THE JOURNAL, MAY 6, 1939, PAGE 1831. A GREAT DEAL OF WORK HAS BEEN DONE WITH THIS PRODUCT SINCE THAT TIME AND THE COUNCIL BELIEVED A REVISION IS IN ORDER TO BRING THIS STATEMENT UP TO DATE. THE COUNCIL THEREFORE AUTHORIZED PUBLICATION OF THE FOLLOWING REVISION OF THE DESCRIPTION AND AUTHORIZED ITS INCLUSION IN NEW AND NONOFFICIAL REMEDIES 1940.

PAUL NICHOLAS LEECH, Secretary.

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**SULFAPYRIDINE** (See Revised Supplement to New and Nonofficial Remedies, 1939, p. 28).

*Actions and Uses.*—It has been shown that sulfapyridine is an effective chemotherapeutic agent in the treatment of experimental pneumococcic, streptococcic, meningococcic, staphylococcic, Friedländer's bacillary and Welch bacillary infections in mice. Clinically, therapeutic successes have been reported in the treatment of pneumococcic lobar and bronchial pneumonia and gonococcic, staphylococcic, meningococcic and streptococcic infections. However, the evidence of its effectiveness is convincing only in respect to its use in pneumococcic infections (in which it is apparently about equally effective against all known types of pneumococci) and in gonococcic infections. Its use in other types of infections must still be considered as in the experimental stage at this time.

In comparison with sulfanilamide, sulfapyridine is irregularly and often poorly absorbed. These differences in absorption seem to be due to an individual response on the part of the patient. The drug is, as a rule, conjugated to the acetylated form in the blood and tissues to a higher degree than is sulfanilamide. These factors make it highly desirable that the concentrations of sulfapyridine be determined in the blood of patients who are receiving this drug, as irregularities in its absorption and conjugation may make treatment with it more difficult than when sulfanilamide is used. As far as is known, that fraction of the drug which is absorbed is excreted mainly by the kidneys in the free and conjugated forms. As a rule, the drug is conjugated to the acetylated form in the urine to a higher degree than is sulfanilamide. Excretion of sulfapyridine is slower than is that of sulfanilamide and it may be four or five days after the drug has been stopped before it is entirely eliminated from the body.

No patient should be treated with sulfapyridine unless arrangements have been made for daily attention by a physician. If the patient is suffering from lobar or bronchial pneumonia, every effort should be made to ascertain the etiologic agent which is causing the pneumonia, and if it is a pneumococcus to type the organism, in order that serum may be given if the pneumonia proves resistant to sulfapyridine therapy. It is not known at the present time just what percentage of patients ill with pneumococcic pneumonia will prove resistant to treatment with this drug.

*Toxicity.*—The toxic manifestations of sulfapyridine therapy are essentially those previously noted in the course of sulfanilamide therapy, and while, in general, the occurrences of toxic manifestations are not as frequent when sulfapyridine is used, they may be very severe. The toxic effects of this drug are unpredictable in their occurrence and presumably have as their basis a peculiar idiosyncrasy. Nausea and vomiting, sometimes very severe, are much more frequent in the course of sulfapyridine therapy than in that with sulfanilamide. The administration of sulfapyridine should not necessarily be discontinued because of vomiting, which often occurs early in the treatment and may cease later. Dizziness, headache and mild or severe mental reactions have been recorded. Cyanosis is less marked as a rule. Acidosis has not been noted. Drug fever and dermatitis are somewhat less frequent in the course of sulfapyridine therapy. Acute hemolytic anemia may occur within the first few days of treatment, and severe leukopenia or even granulocytopenia is not uncommon. It has been noted that children who are receiving sulfapyridine are more likely to develop a severe leukopenia than is the case when sulfanilamide is being given. Serious instances of hepatitis have been reported. Instances of gross hematuria with and without signs of renal failure have been noted in patients receiving this drug. It is likely that the hematuria is associated with the formation of acetylsulfapyridine calculi in the renal tubules and pelves, although the possibility of a direct toxic action on the kidney has not yet been ruled out. Because it is known that acetylsulfapyridine crystals are frequently found in the urine of patients who are receiving sulfapyridine, it is wise to administer enough fluid to keep their urinary output at a normal level (from 1,000 to 1,500 cc.) or slightly above such a level in order to lessen the possible chances of calculus formation. If severe toxic manifestations of drug therapy arise, sulfapyridine should be stopped and fluids forced in order that it may be eliminated from the body as quickly as possible.

*Dosage.*—Adequate standards of dosage have not as yet been agreed on by investigators who have used this drug in the treatment of pneumococcic or other infections. However, the evidence points to the fact that it is important to establish adequate blood levels of the drug within the first day of treatment. Hence in adults suffering from lobar pneumonia large initial doses are given, such as 4 Gm. in a single dose followed by 1 Gm. of the drug every four hours by mouth, this to be continued until the temperature has been normal for at least forty-eight hours; then the dose may be cut to 1 Gm. every six hours and continued until the resolution of the pneumonic process is well under way. At this point the dose of the drug should be reduced to 0.5 Gm. four times a day and should be continued until the lungs are clear. It has been noted that, if treatment with the drug is stopped too soon, recurrence of the pneumonic process may occur. Concentrations of 4 mg. or more of free sulfapyridine for each hundred cubic centimeters of blood seem to be necessary for prompt therapeutic responses to the drug.

In children the initial dose should be from 1 to 2 Gm., depending on the weight of the child, and then from 0.5 to 1 Gm. every four or six hours until the temperature has been normal for forty-eight hours. Following this, the dose of the drug may be gradually reduced until the lungs are clear.

Adequate standards of dosage have not been worked out for the drug in other types of infections.

For determination of sulfapyridine in body fluids, a method developed by A. C. Bratton and E. K. Marshall Jr. (*J. Biol. Chem.* **128**:537 [May] 1939) is to be recommended.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 27, 1940

## THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

**The American Medical Association advocates:**

**1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.**

**2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.**

**3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.**

**4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.**

**5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.**

**6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.**

**7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.**

**8. Expansion of public health and medical services consistent with the American system of democracy.**

## THE ARCHITECTURE OF VIRUSES

Because the viruses possess properties characteristic of living organisms and may cause disease they interest not only the biologist and bacteriologist but also the pathologist. As some of them have characteristics of molecules they likewise draw the attention of the chemist. Even the philosopher is attracted by them because they throw new light on the question of the nature of life. In a recent review Stanley,[1] whose name is intimately associated with the study of proteins, not only presents recent advances in virus research but also speculates on the possible relationship between the atomic theory of matter, the germ theory of disease and the cell theory of life. The architecture of viruses is even more complex than that of the proteins; while simpler viruses seem to be composed of protein and nucleic acid, others also contain carbohydrate and the most complex contain materials which are indistinguishable from those found in bacteria. Although certain of the viruses exhibit chemical and physical characteristics of nucleoproteins and are called molecules by some investigators, the same particles are referred to by others as organisms or cells. Since a number of the viruses have been obtained in crystalline form, it is interesting to note Stanley's conclusion that crystallinity of itself is not evidence as to the animate or inanimate nature of a material.

Much valuable information has been afforded by studies made on the tobacco mosaic virus, which fortunately, unlike most other viruses, is readily obtainable in comparatively large quantities. Tobacco mosaic virus, like other nucleoproteins, yields only amino acids and nucleic acid on hydrolysis. The linkage between the protein and nucleic acid moieties of the virus is, however, not yet known. Although the tobacco mosaic virus has been degraded by various means, in no instance other than in one unconfirmed report[2] have the breakdown products been found to possess virus activity. Apparently this activity is due to a unique architecture that is characteristic of the large molecule as a unit and not to any dissociable prosthetic group. Nucleic acid probably has an important part in this structure, since it has been found in all the viruses that have been purified. The glutamic acid isolated from virus protein after hydrolysis is the naturally occurring stereo-isomer. Considerable importance has been attached to the reported isolation of the unusual form of glutamic acid from malignant tissue.[3]

Viruses vary greatly with respect to the size of the ultimate particle. They may be arranged in an unbroken series from those, such as psittacosis virus, which are 275 millimicrons in diameter, down to poliomyelitis and foot-and-mouth disease viruses, which are only about 10 millimicrons in diameter. Some of the viruses are therefore larger than some accepted living organisms, while others are smaller than certain protein molecules. Stanley points out that the chemist and the pathologist have a common meeting ground in that the pathologist is willing to recognize that the smallest virus, even though a nucleoprotein molecule, and the largest living organism are representatives of a common series in which there is an almost imperceptible gradation of substance and of function. The chemist recognizes the virus proteins as large molecules and realizes moreover that the properties of the viruses must be a direct result of their structure, just as the chemical, physical and biologic properties of ordinary molecules are dependent on structure. According to Stanley there is no reason, from the point of view of structure, why a single structural entity which is called a molecule should not be larger than the ordered group

1. Stanley, W. M.: Physiol. Rev. **19:** 524 (Oct.) 1939. Compare the Harvey Lectures **33:** 170, 1937-1938.

2. Frampton, V. L., and Saum, A. M.: Science **89:** 84 (Jan. 27) 1939.

3. Kögl, Fritz, and Erxleben, Hanni: Ztschr. f. physiol. Chem. **258:** 57 (March 14) 1939.

of structural entities which is called a cell. This investigator is likewise of the opinion that both the cell theory and the atomic theory should be used to define accepted orders of structure and that neither should be handicapped by reference to the living state. Indeed, the transition between these accepted orders of structure may be so gradual that the designation of intervening entities as cells or molecules may be a matter of choice. It is furthermore reasonable to believe that the nature of the bonds between units within cells, as well as the nature of the bonds which hold together the large nucleoprotein, does not differ fundamentally from forces which are already known to exist in atoms.

The venturesome conception of Stanley leads to a blending of the atomic theory, the germ theory and the cell theory into a unified philosophy, the essence of which is structure or architecture. According to this hypothesis the chemical, biologic and physical properties of matter are directly dependent on structure, whether the matter consist of atoms, molecules, germs or cells. Thus the structure of the virus entities would be held responsible for their remarkable properties.

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## PASTEURIZATION OF MILK

Originally the heat treatment of milk was carried out primarily to improve the keeping qualities of raw milk so as to permit transportation in bulk over comparatively long distances with a minimum of loss due to spoilage. Only later with the realization that pasteurization was effective in destroying pathogenic organisms which might be present did the public health aspects of pasteurization assume their present importance.

The question is sometimes raised as to whether or not pasteurization entails any considerable sacrifice of some of the important nutritive properties of milk. A review by Kay [1] presents some observations on this aspect of pasteurization. Recent well controlled investigations carried out by different workers on the comparative nutritive value of raw milk and pasteurized milk when fed to calves have shown that little difference exists between the two types of milk. In these studies not only rate of growth, physical condition and bodily measurements but also blood composition and, in some cases, tuberculin tests were used as criteria of comparison. The results of such investigations have been succinctly summed up by Bartlett,[2] who concluded that raw milk has for calves a nutritive value almost identical with the value of pasteurized milk and that, if there is any difference in favor of raw milk, it is so small that it is readily masked by small variations in the experimental conditions. On the other hand, this investigator observed that a considerable risk of spreading tuberculosis among calves is incurred if they are given commercial raw milk.

The thesis that there is little difference in the nutritive value of raw and pasteurized milk is also, in general, supported by observations made in experiments on rats. Not only are the digestibility and biologic value of the nitrogenous compounds of milk unaffected by commercial holder pasteurization, but also the nutritional availability of calcium and phosphorus of the milk for rats is unchanged by this procedure. Although an adverse effect of holder pasteurization on the vitamin B complex of milk may be demonstrated when rats on appropriate diets are used as experimental animals, the vitamin loss is not serious. It is difficult to extend investigations of the comparative nutritive value of raw and pasteurized milk to children and even more difficult to interpret the results in view of the many variable factors involved. However, a comparative study made abroad on several thousand school children, some of whom received raw milk and others a like quantity of pasteurized milk as an adjunct to the diet, showed that there was no significant difference between the two groups of children after a protracted period.[3] Comparisons involving such factors as increments in weight and height, chest measurements and dynamometer pulls were made. Although slight variations in the nutritive value of the two types of milk would hardly be revealed by such a study, the experiments did indicate that there was at least no serious loss in the nutritive value of milk as a result of pasteurization.

Attempts have been made also by chemical and physical means to determine changes in the nutritive value of milk that might be occasioned by pasteurization. The chemical determination of vitamin $B_1$ before and after this heat treatment has shown that there is a loss of some 20 per cent of the vitamin as a result of the process. Similarly, chemical determinations of ascorbic acid before and after pasteurization indicate that there is a decrease in the content of this vitamin. The loss appears to be only about 20 per cent, however, and not 50 per cent as was previously surmised.[4] In this connection it is interesting to note that a shortening of the time interval between milking the cows and pasteurizing the milk apparently favors the retention of vitamin C. Although it has been reported that milk on pasteurization loses some 20 per cent of its iodine content,[5] it is unlikely that this loss would ordinarily be significant. The experiments indicate, therefore, that from 20 to 25 per cent of vitamin $B_1$, vitamin C and iodine may be lost by pasteurization. All the other known nutritive constituents of cow's milk seem to be unaffected. Indeed, it has been stated that seasonal variations in the nutritional quality of milk are of greater nutritional significance than differences due to pasteurization. The advantages of pasteurization are apparent; by this process not only are the keeping qualities of milk increased but relatively clean milk may be

1. Kay, H. D.: Nutrition Abstr. & Rev. **9**: 1 (July) 1939.
2. Bartlett, S.: Milk and Nutrition, part III, p. 25, Reading, Poynder, 1938, cited by Kay.[1]
3. Milk and Nutrition, part II, cited by Kay.[1]
4. Holmes, A. D.; Tripp, Francis; Woeffler, E. A., and Satterfield, G. H.: J. Am. Dietet. A. **15**: 363 (May) 1939.
5. Magee, H. E., and Glennie, A. E.: Biochem. J. **22**: 11, 1928.

rendered safe without appreciable loss of its nutritive qualities. It should be emphasized, however, that pasteurization of milk is only an adjunct of rigid sanitary control of the methods of production and is not intended to supplant this control.

## Current Comment

### DOMESTICS AS TYPHOID CARRIERS

Recently there has been renewed interest in the public health aspects of domestic service and in attempts to minimize the health hazards incident to domestic employment by periodic examinations.[1] Additional emphasis is given to this problem by the recent report [2] from the director of public health, San Francisco, of four domestics revealed to be typhoid carriers in 1939. In each instance the carrier was identified after the development of typhoid in the family or, in one instance, in the cafeteria in which the domestic was employed. None of these four carriers ever gave a history of having had the disease. Such circumstances merely serve to reemphasize facts already well known; namely, that only healthy adults should be in contact with children or for that matter with other adults. Existing health regulations in most communities still neglect in large measure the safeguards for the health of children in regulating and demanding physical and laboratory examinations of domestics associated with children or engaged in the handling of foodstuffs.

### THE CONTINUOUS POPULATION RECORD

On the eve of the 1940 decennial census of the United States the advantages of the continuous system of recording population statistics sometimes called a national register deserve attention. The continuous plan has already been in operation in several European countries, notably the Netherlands, Belgium and Sweden, and has been proved both practicable and valuable. More recently Great Britain [1] has begun the transition from a periodic to a continuous record. Although the outbreak of the war will make this change more difficult in Britain, it also makes the continuous census more important from the standpoint of evaluating national population resources. In countries in which the continuous accounting system has been developed there is a permanent registration of all inhabitants, somewhat similar to the registration of voters in some parts of the United States.[2] A change of residence is reported to the proper local officials, so that a record of the status of the population at any time is then possible merely by drawing a balance of the registers. Although obviously more expensive than the periodic census, the advantages of records abreast of the time are such as to warrant the serious consideration of its introduction into this country at an early date. In fact it might be possible to reduce expense considerably and to initiate the measure with a maximum of efficiency by working around the technical organization which is now being prepared for the decennial census. The fear which might be expressed in some quarters that such a measure could be used as the introductory wedge in a series of moves for "regimentation" would not appear to be warranted by the experience in such countries as Sweden, Belgium and the Netherlands. The introduction of a continuous population record should be considered exclusively as a means of improving scientific observation in social demography.

1. Medical Examinations for Domestics, editorial, J. A. M. A. **111**: 255 (July 16) 1938.
2. Geiger, J. C.: Domestic Employment as a Possible Causative Factor in Certain Types of Communicable Disease, report from the office of the Director of Public Health, City and County of San Francisco, Jan. 3, 1940.

1. The National Register, Nature **144**: 609 (Oct. 7) 1939.
2. The Problems of a Changing Population, National Resources Committee, May 1938.

### A CASE OF MEDICAL NEED

Not long ago a man in Bergen County, N. J., wrote a letter to Mrs. Franklin D. Roosevelt, stating that he had not received medical treatment and asking for assistance. As Mrs. Roosevelt points out frequently in her column "My Day," she is regularly in receipt of such letters; in fact, every writer of a health column and every one in public life receives requests of this type. Unfortunately, it is not possible to make a complete investigation of every such request. They are usually turned over by President Roosevelt and Mrs. Roosevelt to the Surgeon General of the United States Public Health Service. Recently it has become the practice of the United States Public Health Service, because of the survey of medical needs carried out by the American Medical Association, to send such letters to the secretaries of the state medical societies involved. In the case of the letter here mentioned it was sent to the secretary of the Medical Society of New Jersey, who turned it over to the president of the Bergen County Medical Society, who in turn referred it to the chairman of the Public Health Committee, who happened to be a resident of the community from which the letter came. Now it happened also that this physician had actually been treating the patient who wrote the letter. The patient was seen during 1934, at which time the doctor made a diagnosis and gave treatment. The patient did not, however, return to the doctor until 1936, at which time he found that the patient had been in the hands of a chiropractor during 1934, 1935 and 1936. In 1936 the patient had a "stroke," so that the chiropractor was dismissed and the doctor was called. The doctor treated the patient from December 1936 to March 1937, at which time the patient moved from the state, coming back in 1938. The doctor treated the patient steadily until Dec. 18, 1939, which incidentally was about the time when the patient wrote to Mrs. Roosevelt. The doctor's record indicates that his total receipts from the patient during the period from 1934 to 1939 were $19. Mrs. Roosevelt was sent a complete report of this case of medical need (?). No doubt there are many instances in which there is actual need for medical service and in which it has been difficult, if not impossible, for a patient to secure adequate medical service. However, there are also many instances in which alleged medical need is made the excuse for solicitation for financial assistance.

# ORGANIZATION SECTION

## OFFICIAL NOTES

### THE NEW YORK SESSION

#### Applications for Space in the Scientific Exhibit

Applications for space in the Scientific Exhibit at the New York Session close February 1. Applications should be sent to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

### SPECIAL BLUE NETWORK BROADCAST

February 21 from 9 to 9:30 p. m. central standard time (10 to 10:30 eastern standard time, 8 to 8:30 mountain time and 7 to 7:30 Pacific time) there will be a special broadcast by the American Medical Association and the National Broadcasting Company over seventy stations of the Blue network. The subject will be "Pasteur Conquers Rabies."

The broadcast will be based on an article "Watch Your Dog!" appearing simultaneously in *Hygeia* and on official reports dealing with the seriousness of the rabies situation in the United States.

Special features of the program will be music arranged by Don Markotte of the National Broadcasting Company Music Library from the score which accompanied the motion picture production of Louis Pasteur, starring Paul Muni. This music is made available through the special courtesy of Warner Brothers. An augmented N. B. C. orchestra, directed by Joseph Gallicchio, will render the music. Dramatizations taken from the life of Pasteur and arranged for radio by William J. Murphy will be enacted by a specially selected cast of N. B. C. radio actors, under the direction of J. Clinton Stanley, director of the series Medicine in the News.

A limited number of tickets for admission to the studio will be available to physicians in Chicago and vicinity. Tickets will be limited to two per application. Requests should be sent by mail to the Bureau of Health Education, American Medical Association, 535 North Dearborn Street, Chicago, enclosing a stamped, self-addressed envelop. Telephone requests cannot be received. Applications will be filled in the order in which they are received until all the tickets have been distributed.

### ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

#### Program of Meetings to Be Held in Chicago, February 12 and 13

The Thirty-Sixth Annual Congress of the Council on Medical Education and Hospitals of the American Medical Association will be held at the Palmer House, Chicago, February 12 and 13. The Federation of State Medical Boards of the United States will participate in the congress. The program follows:

MONDAY, FEBRUARY 12, 10 A. M.

*Report of the Council on Medical Education and Hospitals.*
Ray Lyman Wilbur, M.D., LL.D., Chairman, Stanford University, California.

*Addenda to the Agenda for 1940-1950.*
Alan Gregg, M.D., Director, The Medical Sciences, The Rockefeller Foundation, New York.

*Professional Education.*
C. S. Boucher, Ph.D., Chancellor, University of Nebraska, Lincoln.

*The Goal of Medical Education.*
Irvin Abell, M.D., Vice Chairman, Board of Regents, American College of Surgeons, Louisville, Ky.

*Graduate Work in Medical Areas.*
George D. Stoddard, Ph.D., Dean, Graduate College, State University of Iowa, Iowa City.

*Trends in Liberal Arts Education.*
George A. Works, Ed.D., Professor of Higher Education, Department of Education, University of Chicago.

MONDAY, FEBRUARY 12, 2:15 P. M.

*Program for the Instruction of Interns.*
Nathan B. Van Etten, M.D., President-Elect, American Medical Association, New York; Nathan Smith, M.D., Deputy Medical Superintendent, Morrisania City Hospital, New York.

*Medical Education—1905 to 1940.*
Morris Fishbein, M.D., Editor, Journal of the American Medical Association, Chicago.

*Medical Education in Relation to the Naval Service.*
Ross T. McIntire, M.D., Rear Admiral, Medical Corps, and Surgeon General, United States Navy, Washington, D. C.

*The Work of the National Board of Medical Examiners During Its First Quarter Century.*
Louis B. Wilson, M.D., Director Emeritus, Mayo Foundation for Medical Education and Research, Rochester, Minn.

*American Contributions to Medical Education in China and India.*
Edward H. Hume, M.D., Director, Christian Medical Council for Overseas Work, New York.

TUESDAY, FEBRUARY 13, 10 A. M.

*The Place of Malignant Disease in the Medical Curriculum.*
Ludvig Hektoen, M.D., LL.D., Executive Director, National Advisory Cancer Council, Washington, D. C.

*The Selection of Medical Students.*
Irving S. Cutter, M.D., LL.D., Dean, Northwestern University Medical School, Chicago.

*The Recognition of Professional Aims in the Teaching of the Fundamental Medical Sciences.*
M. B. Visscher, M.D., Ph.D., Professor of Physiology, University of Minnesota Medical School, Minneapolis.

*Opportunities for a Medical Career in the Federal Civil Service.*
A. Ray Dawson, M.D., Senior Medical Officer, Examining Division, United States Civil Service Commission, Washington, D. C.

*Role That a Children's Hospital Should Play in the Community.*
Alan Brown, M.D., Professor of Pediatrics, University of Toronto Faculty of Medicine, Ontario.

*The Integration of Preventive Medicine in the Education of a Physician.*
S. P. Lucia, M.D., Assistant Professor of Medicine, University of California Medical Center, San Francisco.

THE FEDERATION OF STATE MEDICAL BOARDS

MONDAY, FEBRUARY 12, 6:30 P. M.

FEDERATION DINNER

*Presidential Address.*
Roy B. Harrison, M.D., President, Federation of State Medical Boards of the United States, New Orleans.

*Address.*
Nathan B. Van Etten, M.D., President-Elect, American Medical Association, New York.

TUESDAY, FEBRUARY 13, 9:30 A. M.

*The Refugee Physician.*
Joseph H. Pratt, M.D., Boston Committee on Medical Emigrés.

*Inter-American Relation in Medical Education and Licensure.*
Walter L. Bierring, M.D., Secretary-Treasurer, Federation of State Medical Boards of the United States, Des Moines, Iowa.

*Social Implications of the Licensure Program.*
Frances P. DeLancy, Ph.D., Assistant Professor of Political Science, West Virginia University, Morgantown.

*Advisory Council on Medical Education as Related to Licensure.*
Willard C. Rappleye, M.D., Dean, Columbia University College of Physicians and Surgeons, New York.

TUESDAY, FEBRUARY 13, 2 P. M.

*Relationship Between Advertising and the Practice of Medicine.*
K. E. Miller, M.D., Senior Surgeon, United States Public Health Service, Federal Trade Commission, Washington, D. C.

*The Philosophic Trend of Medical Practice Laws.*
H. M. Platter, M.D., Secretary, Ohio State Medical Board, Columbus.

*The Advantages of a Single State Board of Medical Examiners.*
J. N. Baker, M.D., Secretary, Alabama State Board of Medical Examiners, Montgomery.

*Executive Session.*

CENTRAL COUNCIL FOR NURSING EDUCATION

MONDAY, FEBRUARY 12, 12:15 P. M.

*Luncheon for Lay Boards of Hospitals and Public Health Nursing Organizations.*

*Address: A Plan for Meeting the Nursing Needs in the Community.*
Miss Elizabeth Fox, R.N., Executive Director, New Haven Visiting Nurse Association and Associate Professor, Yale School of Nursing.

# MEDICAL LEGISLATION

## MEDICAL BILLS IN CONGRESS

*Change in Status.*—H. R. 7922, the Independent Offices Appropriation Bill, has passed the House of Representatives. In connection with the appropriation for the Veterans' Administration, an amendment was adopted providing that no part of the appropriation shall be used for hospitalization or examination of persons other than veterans, "unless a reciprocal schedule of pay is in effect with the agency or department involved." In support of this amendment, it was pointed out that employees of several federal agencies, including the Civilian Conservation Corps, the Works Progress Administration, the Post Office Department, the Civil Service Commission, and the Unemployment Compensation Commission and beneficiaries of the Railroad Retirement Board, are being examined by the medical staffs of the Veterans' Administration facilities scattered throughout the country. In many cases the employees of these federal agencies are hospitalized and spend many weeks in veterans' facilities. All the agencies referred to, it was pointed out, reimburse the Veterans' Administration at the rate of $3.75 a day for each person receiving medical service, with the exception of the Post Office Department, the Civil Service Commission and the Unemployment Compensation Commission. These three agencies, it was stated, enjoy a special privilege that is charged to the expenses entered against the veterans of wars. During the month of December 1939, it was stated, 1,323 employees of the Post Office Department, Civil Service Commission and the Unemployment Compensation Commission were examined by the medical staffs of various veterans' hospitals. In order to make a complete medical check-up on these federal employees, it was necessary for the physicians to conduct 3,812 separate examinations. According to a statement made on the floor of the House when this amendment was being considered, there were 1,176 nonveterans hospitalized in veterans' facilities as of Jan. 4, 1940.

*Bills Introduced.*—H. R. 7838, introduced by Representative Peterson, Georgia, provides that where a veteran during a peacetime enlistment contracts pulmonary tuberculosis in the service and in line of duty, and where service connection and pension is granted by reason thereof and where the tuberculosis has become or does become an arrested case, then such veteran shall be paid a pension of not less than $50 a month. H. R. 7874, introduced, by request, by Representative Rankin, Mississippi, provides that the terms "permanent and total" or "total permanent" wherever used in laws relating to the payment of compensation or pension to veterans of the World War shall be defined as any reasonably permanent impairment or defect of mind or body, or both, which prevents the individual from following a substantially gainful occupation, provided that, without prejudice to any other cause of disability or employability, the permanent loss of the use of both feet, of both hands or of both eyes, or of one foot and one hand, or of one foot and one eye, or of one hand and one eye, or the loss of hearing of both ears, or the organic loss of speech shall be deemed total permanent disability.

## DISTRICT OF COLUMBIA

*Bills Introduced.*—S. 3124, introduced by Senator King, Utah, and H. R. 7865, introduced by Representative Cochran, Missouri, propose to enact a new dental practice act for the District of Columbia. The bill exempts from its provisions "a legally qualified physician or surgeon unless he practices dentistry as a specialty."

# WOMAN'S AUXILIARY

### Arkansas

An auxiliary to the Jefferson County Medical Society was organized at Pine Bluff October 3. Mrs. Virgil Payne was elected president.

At a joint meeting of the auxiliaries to the Arkansas County and the Monroe County Medical Societies November 7, Mrs. C. E. Kitchens, president of the auxiliary to the Arkansas State Medical Society, discussed the subject "Health."

At the November meeting of the auxiliary to the Sebastian County Medical Society, members voted to contribute $10 to the student loan fund of the state auxiliary and to renew *Hygeia* subscriptions which were placed last year in clubs, institutions and schools of the Fort Smith area. At this meeting, Dr. Thomas P. Foltz, president of the Sebastian County Medical Society, discussed "Socialized Medicine." Dr. Foltz advised auxiliary members of ways in which they might cooperate with the medical society in its care of indigent patients.

During the meeting of the Second Councillor District Medical Society in Searcy October 19, visiting doctors' wives were entertained by the auxiliary to the Independence County Medical Society.

Mrs. S. H. Watson, president of the auxiliary to the Texas State Medical Association, Mrs. C. E. Kitchens, president of the auxiliary to the Arkansas Medical Society, and Mrs. W. K. West, past president of the auxiliary to the Southern Medical Association, were speakers at a luncheon given in their honor recently by the auxiliary to the Bowie-Miller Counties Medical Society in Texarkana.

### Illinois

The auxiliary to the Chicago Medical Society entertained the board of directors of the Woman's Auxiliary to the American Medical Association with a reception and luncheon at the Palmer House, Chicago, followed by a program at the Museum of Science and Industry in Jackson Park November 16, the day preceding the annual fall board meeting of the Woman's Auxiliary to the American Medical Association. Mrs. Charles Segal, president, and members of the council of the auxiliary to the Chicago Medical Society welcomed the officers, directors and chairmen of standing committees of the auxiliary to the American Medical Association, and also presidents of auxiliaries to state medical societies. Speakers on the program at the museum were Mr. Rufus C. Dawes, president of the museum; Dr. William Allen Pusey, a trustee of the museum and chairman of its medical advisory committee; Dr. Philip Fox, director of the museum; Dr. Eben J. Carey, curator of the medical science exhibits of the museum, and Mrs. Rollo K. Packard, president of the auxiliary to the American Medical Association. Officials of the museum arranged a specially conducted tour following the program.——At the opening meeting of the auxiliary to the Chicago Medical Society in October, Mrs. Arthur I. Edison, chairman of the legislative committee of the auxiliary, spoke on medical legislation in Illinois.——At the December meeting of the auxiliary, Mrs. Eben J. Carey, chairman of the Hygeia Committee of the auxiliary to the American Medical Association, spoke on the importance of *Hygeia* in health education.——Dr. W. W. Bauer, director of the Bureau of Health Education of the American Medical Association, was speaker November 28 at a meeting of the auxiliary to the Irving Park Branch of the Chicago Medical Society.

### Michigan

Mrs. Ralph G. Cook was elected president of the auxiliary to the Kalamazoo County Medical Society in Kalamazoo October 12.——Mrs. Alexander M. Campbell was elected president of the auxiliary to the Kent County Medical Society in Grand Rapids October 11. Speakers on the program were Mrs. O. H. Gillett, Dr. Luther Carpenter and Rabbi Jerome Folkmann. Eighty-five members attended the opening meeting of the auxiliary to the Saginaw County Medical Society held in Saginaw October 24. Speakers were officers of the auxiliary to the Michigan State Medical Society.

# Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

## ARKANSAS

**Public Health Conference.**—The state board of health held its annual conference in Little Rock December 11-12. Among the speakers were Drs. Jesse D. Riley, State Sanatorium, on "Public Health Aspects in the Control of Tuberculosis"; Leroy L. Fatherree, Little Rock, "The Typhoid Carrier; The Epidemiologic Aspects"; James Q. Blackwood Jr., Helena, "Clinical Management of Syphilis," and James F. Hays, Russellville, "Present Day Knowledge of the Active Immunizing Agents of Diphtheria."

**Society News.**—The Ouachita County Medical Society was addressed in Camden December 14 by Drs. Barnett P. Briggs and Raymond L. Gregory, Little Rock, on "Management of the Premature Infant" and "Coronary Artery Disease" respectively.——At a meeting of the Independence County Medical Society December 11 the speakers were Drs. Wesley J. Ketz on "The Prostate and the Kidneys"; Finis Q. Wyatt, "Osteomyelitis," and Oscar J. T. Johnston, "Knife Blade in the Skull." All are from Batesville.——Dr. Ira F. Jones discussed "The Management of Postpartum Hemorrhage" before the Sebastian County Medical Society, Fort Smith, December 12.——Dr. Jesse D. Riley, State Sanatorium, addressed the Garland County Medical Society December 12 on "The Early Diagnosis of Tuberculosis."

## CALIFORNIA

**Course on Ophthalmology and Otolaryngology.** — The ninth annual midwinter course sponsored by the Research Study Club of Los Angeles was held January 15-26. Included among those participating were Drs. Harold G. Tobey, Boston; George L. Tobey Jr., Boston; William J. McNally, Montreal, Quebec; Albert D. Ruedemann, Cleveland; Algernon B. Reese, New York; Edward Jackson, Denver; John F. Barnhill, emeritus professor of surgery of the head, Indiana University School of Medicine, Indianapolis; Meyer Wiener, St. Louis; Simon Jesberg, Augustus G. Pohlman and Louis K. Guggenheim, Los Angeles; Norman A. Watson, Ph.D., and Vern O. Knudsen, Ph.D., both of Los Angeles.

**Society News.**—Dr. Albert H. Elliott Jr., Santa Barbara, addressed the Hollywood Academy of Medicine January 11 on "The Pathologic Physiology of Dehydration."——A symposium on venereal diseases was presented before the Alameda County Medical Association in Oakland January 15 by Drs. Frederick C. Novy Jr., Leon I. Oppenheimer, Herman V. Allington, Ervin H. Epstein and Charles J. Lunsford. All are from Oakland. At a meeting December 18 the speakers were Drs. Harry J. Templeton and William H. Sargent, Oakland, on "Actinomycosis"; Roscoe G. Van Nuys and Robert O. Moody, Berkeley, "The Position and Mobility of the Kidneys in Healthy Young Men and Women," and Walter L. Voegtlin, Seattle, "Treatment of Alcoholism by the Conditioned Reflex Method."

## COLORADO

**Midwinter Postgraduate Clinics.** — The seventh annual midwinter postgraduate clinics of the Colorado State Medical Society will be held at the Shirley-Savoy Hotel, Denver, February 7-9. Guest speakers will include:

Dr. Paul C. Colonna, Oklahoma City, The Painful Hip in Children, with Differential Diagnosis.
Dr. Joseph Brennemann, Chicago, Upper Respiratory Infections in Children.
Dr. Alfred I. Folsom, Dallas, Texas, Bladder Irritation in Women.
Dr. Lowell S. Goin, Los Angeles, A New Method of Treating Certain Types of Cancer of the Bladder.
Dr. Michael L. Mason, Chicago, Principles of Management of Hand Infections.
Dr. Cyrus C. Sturgis, Ann Arbor, Mich., Present Status of Our Knowledge Concerning the Treatment of the Anemias.
Dr. Earl C. Sage, Omaha, Interesting Experiences in Obstetrics.
Dr. John M. Hargreaves, Randolph Field, Texas, Ophthalmologic Requirements for Military Aviation.

Clinics will be conducted by the guest speakers as well as by Colorado physicians. A symposium on arthritis will be presented by Drs. Sturgis, Mason, Colonna, Brennemann, Goin and Sage. Entertainment will include a smoker, luncheons and a dinner dance.

## GEORGIA

**Dr. Elkin Appointed Professor of Surgery.**—Dr. Daniel C. Elkin, professor of surgery, Emory University School of Medicine, Atlanta, has been named Joseph B. Whitehead professor of surgery at the school. The appointment fills a position recently created under a grant of $250,000 from the Joseph B. Whitehead Foundation of Atlanta. Under the terms of the grant, the income derived from the $250,000 will be expended to support both teaching and research activities connected with the new professorship. Dr. Elkin, a native of Kentucky, graduated at Emory University School of Medicine in 1920 and joined the faculty in 1923.

**Graduate Assembly.**—The third annual Atlanta Graduate Medical Assembly was held January 15 at the Biltmore Hotel, under the auspices of the Fulton County Medical Society. The speakers included:

Dr. William J. Dieckmann, Chicago, The Treatment of Eclampsia.
Dr. Joseph Earle Moore, Baltimore, Unsolved Problems in Syphilis.
Dr. Philip Lewin, Chicago, Low Back Pain.
Dr. Alexis F. Hartmann, St. Louis, Studies in Acid Base Balance.
Dr. Philip S. Hench, Rochester, Minn., Chronic Infectious (Atrophic) Arthritis; Its Diagnosis and Treatment.
Dr. Watt W. Eagle, Durham, N. C., Sphenopalatine Neuralgia.
Dr. Alfred Blalock, Nashville, Tenn., Shock.
Dr. William E. Chamberlain, Philadelphia, Pitfalls in X-Ray Diagnosis.
David L. Thomson, Ph.D., Montreal, Canada, Sex Hormones and Their Therapeutic Uses.
Dr. Stanford W. Mulholland, Philadelphia, Hypertension—The Problem, the Study, the Future.
Dr. Cyrus C. Sturgis, Ann Arbor, Mich., The Prognosis and Treatment of Hypertension.
Dr. George J. Heuer, New York, Treatment of Pulmonary Abscess.
Dr. Clarence B. Farrar, Toronto, Canada, Psychiatric Problems in Daily Practice.
Dr. Marion A. Blankenhorn, Cincinnati, Deficiency Diseases in Office Practice.

## INDIANA

**Personal.**—Dr. Paul Schmiedicke, Marinette, Wis., has been appointed attending physician in the student health department of Purdue University, Lafayette.——Dr. Arthur P. Echternacht, formerly of St. Louis, has been appointed roentgenologist at the Indiana University Medical Center, Indianapolis. Dr. Harold M. Trusler, assistant professor of surgery at the center, has been named visiting physician for the newly established department of constructive surgery at the Indianapolis City Hospital.

**Society News.** — At a meeting of the LaPorte County Medical Society, LaPorte, December 21, Dr. Carlo S. Scuderi, Chicago, discussed "Fractures of the Wrist." —— Among the speakers before the annual meeting of the St. Joseph County Medical Society, South Bend, recently, were Drs. Louis Rudolph, Chicago, on "Prolonged Labor"; Edgar F. Kiser, Indianapolis, "Common Errors in Diagnosis and Treatment of Cardiac Diseases"; Peter A. Rosi, Chicago, "Lesions of the Rectum," and Andrew C. Ivy, Chicago, vitamins.——Dr. Harold M. Trusler, Indianapolis, addressed the Northeastern Indiana Academy of Medicine December 28 in Kendallville on "Treatment and Cure of Burns."

**Annual Conference of Secretaries.**—The Indiana State Medical Association held its annual conference of secretaries of the county medical societies at the Columbia Club, Indianapolis, January 21. The speakers were:

Dr. Henry H. Turner, Oklahoma City, Postgraduate Medical Education in Oklahoma.
Dr. Stephen J. Donovan, Michigan City, Attendance at Medical Society Meetings.
Dr. Peter Irving, New York, Hospital Insurance and Medical Indemnity.
Dr. Albert M. Mitchell, Terre Haute, A Report on Hospital Insurance.
Drs. Norman M. Beatty and Joseph William Wright, Indianapolis, Legislative Review and Discussion of H. B. 74.
Dr. Eldridge M. Shanklin, Hammond, The Journal of the Indiana State Medical Association.
Dr. Maynard A. Austin, Anderson.
Dr. Cleon A. Nafe, Indianapolis, How the Executive Committee Functions.
Mr. Albert Stump, Indianapolis, Legal Matters.

The principal speaker at the dinner was Senator James E. Murray, Butte, Mont., chairman of the senate subcommittee which is considering the Wagner Bill.

## IOWA

**Society News.**—Dr. Paul Titus, Pittsburgh, will discuss "Recent Advances Made in Obstetrics" before the Linn County Medical Society, Cedar Rapids, February 12. Dr. Ralph M. Waters, Madison, Wis., discussed "The Dynamics of Respiration" before the society January 11. —— The Black Hawk County Medical Society and the Waterloo Dental Society were addressed December 5 by Dr. Edward H. Hatton, Chicago, on "Infection as Seen in the Tissues of the Mouth."——At a

meeting of the Decatur County Medical Society in Decatur December 21 Drs. Leon Paul Forgrave, St. Joseph, Mo., spoke on "Arthritis from the Surgical Standpoint" and Winton T. Stacy, St. Joseph, Mo., "The Toxemias of Pregnancy."——The Fayette County Medical Society was addressed December 5 in West Union by Drs. Cluley C. Hall, Maynard, on "Use and Abuse of Narcotics" and Harry P. Moen, West Union, "Surgical Treatment of External Hemorrhoids."——Among others, Drs. Robert E. Britt, St. Louis, addressed the Lee County Medical Society in Fort Madison December 13 on "Psychosomatic Relationships in Constitutional Disease" and Alvin E. Vitt, St. Louis, "Use of Sulfanilamide on Genito-Urinary Infections."——At a meeting of the Marion County Medical Society in Knoxville December 14 Dr. Wendell M. Willett, Des Moines, spoke on "Fundamentals of Diagnosis and Treatment in Dermatology."

## MARYLAND

**Sulfapyridine and Pneumonia Serum Depots.**—As a part of a campaign begun early in the fall against pneumonia, supplies of sulfapyridine and serum have been established in the twenty-three counties of the state. In addition, laboratory centers were established at Cumberland, Hagerstown, Frederick, Rockville, Hurlock, Salisbury and Baltimore. These units were also to be set up in Annapolis, Elkton and LaPlata, newspapers reported. The drugs were to be distributed free to indigent patients when requested by physicians and a slight charge was to be made to those who can afford to pay.

**The De Lamar Lectures.**—A series of lectures on medical care opened Tuesday afternoon January 9 under the De Lamar Foundation of the Johns Hopkins University School of Hygiene and Public Health. Dr. Nathan B. Van Etten, New York, President-Elect, American Medical Association, was the speaker on "Medical Care and the Medical Profession." Others in the series are:

Dr. Edward S. Godfrey Jr., Albany, January 16, Medical Care in New York State.
Isidore S. Falk, Ph.D., Chevy Chase, January 23, Health Insurance in Other Countries.
Dr. Ralph C. Williams, Washington, D. C., January 30, The Medical Service Plan of the Farm Security Administration.
Dr. Watson S. Rankin, February 6, Charlotte, N. C., The Hospital Program of the Duke Endowment.
Mr. J. D. Colman, Baltimore, February 13, Voluntary Hospital Insurance.
Dr. Kingsley Roberts, New York, February 20, Consumer Cooperative Medical Services.
Nathan Sinai, Ph.D., Ann Arbor, Mich., February 27, Systems of Prepayment for Medical Care Operated by Physicians.

## MASSACHUSETTS

**Dr. Minot Honored.**—Dr. George R. Minot, professor of medicine, Harvard Medical School, Boston, was awarded the Gordon Wilson Medal of the American Clinical and Climatological Association at its meeting in Saranac Lake, N. Y., recently. Dr. Minot delivered the Gordon Wilson Lecture at the meeting.

**A Study of Normal Young Men.**—In the second year of its study of normal young men, the department of hygiene of Harvard University has doubled the number of undergraduate subjects undergoing investigation as to physical and mental characteristics and social backgrounds. According to the New York *Times*, last year fifty-five students volunteered to participate in the study, which is financed by the William T. Grant Foundation. This year about 100 new men will be studied. Last year, ten specialists in psychology, anthropology, physiology, medicine and sociology held 1,100 interviews with these students, averaging about eighteen hours for each person. Besides physical examinations, the students underwent intelligence tests. A similar study is under way in the fatigue laboratory, where the object is to learn the physiologic changes occasioned by work and muscular exercise and by variations in environmental conditions. Dr. Arlie V. Bock, Cambridge, who is in charge of the hygiene department investigation, stated that the care of the sick may be construed as a negative attack, while the study of the well should be a positive one, and should yield results that may point the way to the solution of many difficulties.

## MICHIGAN

**University News.**—Dr. Eugene M. K. Geiling, professor and chairman of the department of pharmacology, School of Medicine of the Division of Biological Sciences, University of Chicago, lectured at the University of Michigan Medical School, Ann Arbor, November 30 on "Comparative Anatomy and Pharmacology of the Pituitary Gland."

**Personal.**—Mrs. Sarah Burgess, librarian at the Hurley Hospital, Flint, has been appointed to the newly created position of executive secretary of the Genesee County Medical Society.——Dr. Herbert E. Randall, Flint, was honored December 21 when more than a hundred friends and colleagues assembled to acknowledge his many years of service to Hurley Hospital.

**Society News.**—Dr. Arthur C. Curtis, Ann Arbor, discussed "Uses, Action, Toxic Effects of Neoprontosil, Sulfanilamide, Sulfapyridine" before the Washtenaw County Medical Society, Ann Arbor, January 9.——At a meeting of the Kalamazoo Academy of Medicine December 19 Dr. Ralph B. Fast spoke on "Physiology of the Larynx Illustrated with High-Speed Movies of the Larynx in All Its Functions," and Dr. Paul W. Harrison, "Medicine in Arabia." Both speakers are from Kalamazoo.——Dr. Marion A. Blankenhorn, Cincinnati, discussed "The Chemotherapy of Lobar Pneumonia" before the Wayne County Medical Society, Detroit, January 8.——The Detroit Society of Neurology and Psychiatry was addressed January 11 by Drs. Theophil Klingmann, Ann Arbor, on "The Physical Basis of Schizophrenia" and Lowell S. Selling, Detroit, "Results of Therapy in Cases of Sex Deviation."

## MINNESOTA

**Dr. Myers Honored in Puerto Rico.**—Dr. Jay Arthur Myers, professor of medicine, preventive medicine and public health, University of Minnesota Medical School, Minneapolis, was awarded the 1939 gold medal of the Society of Puerto Rican Tuberculosis Physicians "for outstanding work in the field of tuberculosis." Dr. Myers gave a series of lectures in Puerto Rico early in December under the auspices of the society and addressed the annual session of the Puerto Rico Medical Association.

**Courses at Center for Continuation Study.**—*Minnesota Medicine* announces the winter program at the Center for Continuation Study, University of Minnesota. The schedule opened with a course on hospital administration January 15-20; one will open on dietetics January 29-31. Others in the series include:

Problems of Newborn and Premature Infants, February 8-10.
Proctology, February 12-17.
Diagnostic Roentgenology, February 12-17.
Otolaryngology, February 19-24.
Medical Social Service, February 29-March 2.
Physical Therapy Technology, March 4-6.
Surgery, March 11-16.

Special teachers have been appointed for the courses, including Drs. Albert C. Furstenberg, Ann Arbor, Mich.; Chevalier L. Jackson, Philadelphia; Dean M. Lierle, Iowa City; Philip E. Meltzer, Boston; George E. Shambaugh Jr., Chicago, and Edward D. Churchill, Boston.

**Society News.**—Dr. Russell M. Wilder, Rochester, was elected president of the Minnesota Society of Internal Medicine at a recent meeting, succeeding Dr. Moses Barron, Minneapolis. Dr. Max H. Hoffman, St. Paul, was chosen vice president and Dr. Reuben A. Johnson, Minneapolis, secretary-treasurer.——The Minneapolis Surgical Society was addressed January 4 by Drs. Charles E. Merkert on "Abdominal Pain and Ileus Due to Ureteral Constriction"; Ernest R. Anderson, "Fracture of the Spine of the Tibia"; William R. Jones and Ralph H. Creighton, "Intussusception in Adult," and Herman O. McPheeters, "Padgett's Dermatome and Split Grafts." The society will be addressed at its eighteenth annual dinner by Dr. Sumner L. S. Koch, Chicago, February 1 on plastic surgery.——At a meeting of the Hennepin County Medical Society January 31 Dr. Hugh R. Butt, Rochester, will speak on "Recent Advances in the Knowledge of Vitamins and Their Clinical Application." Dr. Everett C. Hartley, St. Paul, addressed the society January 24 on "Obstetric Treatment Predetermined by X-Ray Diagnosis."

## MISSISSIPPI

**New Professor of Anatomy.**—Dr. David S. Pankratz, assistant professor of anatomy, histology and embryology, University of Tennessee College of Medicine, Memphis, has been appointed professor of gross anatomy at the University of Mississippi School of Medicine, University. He succeeds Dr. Archibald R. Buchanan, who resigned to take a similar position at the University of Colorado School of Medicine, Denver.

**Society News.**—The Northeast Mississippi Thirteen Counties Medical Society was addressed at Tupelo December 12 by Drs. William A. Evans, Aberdeen, on "Treatment of the

Pneumonias"; Harvey F. Garrison, Jackson, "Treatment of Pneumonia in Infants and Children"; John W. Williams, Greenville, "Acute Pelvic Appendicitis," and Robert L. Sanders, Memphis, Tenn., "Diagnosis and Surgical Management of the More Common Lesions of the Colon."

## NEBRASKA

**Society News.** — Dr. Buford G. Hamilton, Kansas City, Mo., addressed the Omaha-Douglas County Medical Society January 9 on "Problems Associated with Breast Feedings." Drs. Charles Edward Thompson and Maine C. Andersen, Omaha, addressed the society December 14 on "Theoretical and Practical Application of the Electrocardiograph."

**District Meeting.**—The Third Councilor District Medical Society met at Humboldt recently with the following speakers, among others: Drs. Richard H. Young, Omaha, "Differentiation of the Neuroses from Organic Disease"; Everett E. D. Angle, Lincoln, "Transurethral Resection of the Prostate for Obstruction," and John Jay Keegan, Omaha, "Low Back Pain and Sciatica Caused by Intervertebral Disk Protrusion." Dr. Arthur L. Miller, Kimball, president of the state association, discussed "The Government in Medicine," and Dr. Clayton F. Andrews, Lincoln, president-elect, "The Benefits of Organized Medicine."

## NEW JERSEY

**Public Lectures.**—A feature of a medical exhibit to be presented for the public by the Essex County Medical Society at the Mosque Theater Building, Newark, February 5-10 will be a series of lectures each evening. The speakers announced are:

Dr. Howard W. Haggard, New Haven, Conn., Progress in Medicine, February 5.
Dr. Grant Thorburn, New York, Tuberculosis, February 6.
Dr. Charles Hendee Smith, New York, Care of Preschool Children, February 7.
Dr. Paul Padget, Baltimore, Syphilis, February 8.
Dr. Harrison S. Martland, Newark, and Inspector E. P. Coffey of the Federal Bureau of Investigation, February 9, Accidental Deaths and Crime Detection by Laboratory Methods.

Exhibits on thirty-three scientific subjects have been prepared and three pharmaceutic houses are participating.

## NEW YORK

**Campaign for Poliomyelitis Funds.**—Governor Lehman issued a proclamation January 14 designating January as "Poliomyelitis Campaign Month" and called on the public to support the organized campaign now conducting its annual drive for funds. The governor pointed out that the people of New York had been "painfully reminded of the still unconquered hostility of poliomyelitis" during the past year and acknowledged aid received from the National Foundation for Infantile Paralysis, which carries on the fight against the disease with funds received from the Committee for the Celebration of the President's Birthday.

**Cancer Now Reportable.**—Reporting of cancer cases to the state department of health was begun January 1 under a law passed in 1939. The law requires that cases be reported by every physician who sees a case of cancer or other malignant tumor; every hospital, dispensary or related institution to which such a case is admitted and every laboratory in which a tissue diagnosis of cancer or other malignant tumor is made. It is believed that reporting will make available data that will be of value in the control program, such as whether or not cancer is actually increasing, in what sections and among what groups it is most prevalent.

**Society News.** — Dr. C. Charles Burlingame, Hartford, Conn., addressed the Dutchess County Medical Society, Poughkeepsie, January 10 on "Psychiatry—the Cinderella of Medicine."——Dr. Leon E. Sutton addressed the Onondaga County Medical Society, Syracuse, January 2 on "Early Local Care of Traumatic Wounds, Stressing Wounds of the Face."——Dr. Charles F. Geschickter, Baltimore, addressed the Warren County Medical Society, Glens Falls, recently on "Malignancies of the Breast."——Dr. Stuart B. Blakely addressed the Broome County Medical Society, Binghamton, January 9 on "The Psychology of Pregnancy."——At a meeting of the Ontario County Medical Society in Canandaigua January 9 the speakers were Dr. Albert M. Crance, Geneva, on "Factors of Importance in the Modern Treatment of Syphilis" and Frank Maltaner, Ph.D., Albany, "The Quantitative Complement-Fixation Test for Syphilis."

### New York City

**Gifts to Columbia.** — The John and Mary R. Markle Foundation recently donated $9,500 to Columbia University, $6,000 of which will support studies on the chemistry of senescence and of arteriosclerosis and $3,500, an investigation of nonpellagrous dermatitis controlled by the vitamin B complex. Other recent gifts include:

Florida Citrus Commission, $5,000 for research on the nutritional aspects of citrus fruits.
Estate of Dr. Francis I. Proctor, $2,000 for studies on the application of keratoplasty to trachoma and various amounts for other purposes, making a total of $3,154.60.
Oberlaender Trust, $2,000; Kohut Fund, $1,500; Emergency Committee in Aid of Displaced Foreign Medical Scientists, $2,000 toward salaries in the department of public health practice.

**Selecting the Staff for Tuberculosis Hospital.** — Dr. Sigismund S. Goldwater, commissioner of hospitals, has appointed a committee to assist in the selection of a medical staff for the new 500 bed hospital for tuberculosis soon to be completed. Dr. Robert F. Loeb is chairman of the committee and members are Drs. Frank N. Dealy, Jamaica; Robert E. Plunkett, Troy; I. Ogden Woodruff and Carl Eggers. Applicants must be citizens of the United States and must be physicians in good ethical standing licensed to practice in New York. The medical superintendent, pathologist and roentgenologist will be appointed from civil service lists. Applicants for appointment to the honorary visiting staff are asked to submit their applications to the chairman of the committee or to the commissioner of hospitals.

## NORTH CAROLINA

**Society News.**—Dr. Robert C. Bunts, Asheville, addressed the Buncombe County Medical Society, Asheville, January 22 on "Congenital Obstruction of the Bladder Neck."——At a meeting of the Catawba Valley Medical Society in Newton January 12 the speakers were Drs. Edwin C. Hamblen, Durham, on endocrine therapy; Verling K. Hart, Charlotte, "Use of the Bronchoscope, Exclusive of Its Use for Removal of Foreign Bodies," and Judge Wilson Warlick, Newton, "Medical Jurisprudence."——Dr. Dickinson Sergeant Pepper, Philadelphia, addressed the Mecklenburg County Medical Society, Charlotte, December 5 on "Treatment of Pneumonia with Sulfapyridine."

**Antenatal Syphilis Tests Required.**—A new law requiring pregnant women to submit to a blood test for syphilis went into effect in North Carolina January 1. The law provides that any duly licensed physician shall on request of the woman take the blood sample and submit it to an approved laboratory. Midwives may not take the samples but must refer their patients to a licensed physician. When a pregnant woman is not able to pay a physician she may have a sample taken by the county health officer or the county physician. In reporting births and stillbirths physicians shall be required to state whether such serologic tests have been made during pregnancy, this information to appear on the certificate. Violation of the law carries a fine of $25, imprisonment for thirty days or both, in the discretion of the court.

## OHIO

**Dr. Dunham Resigns as Sanatorium Head.**—Dr. Henry Kennon Dunham, Cincinnati, medical director of the Hamilton County Tuberculosis Sanatorium for many years, has resigned, according to newspaper reports, and Dr. John H. Skavlem has been appointed acting medical director. Dr. Dunham has been with the sanatorium since 1910 and Dr. Skavlem has been associated with him since 1921.

**Society News.** — Dr. Gabriel Tucker, Philadelphia, will address the Mahoning County Medical Society, Youngstown, February 20 on "Diseases of the Larynx and Trachea."——Dr. Ralph M. Waters, Madison, Wis., addressed the Stark County Medical Society, Canton, December 14 on "Relation of Pain Relieving Drugs to Pulmonary Morbidity."——Dr. Paul C. Colegrove, Oberlin, addressed the Lorain County Medical Society, Lorain, December 13 on "Subacute Bacterial Endocarditis."

**Annual Series of Free Lectures.**—The tenth annual series of free public health lectures sponsored by the Academy of Medicine of Cleveland, the Albert Fairchild Holden Foundation of Western Reserve University and the Cleveland Medical Library Association at the Allen Memorial Medical Library Auditorium will begin February 11. Dr. Harry C. Rosenberger will give the first lecture on "Sense and Nonsense About

Sinuses." The second will be given February 25 by Dr. Charles E. Kinney on "Conserving Your Hearing" and the third March 10 by Dr. Paul G. Moore on "The Changing Eye."

**Dr. Follansbee Honored.**—Dr. George E. Follansbee, Cleveland, chairman of the Judicial Council of the American Medical Association, has been made an honorary member of the Academy of Medicine of Cleveland, in recognition of his long service to the academy and to organized medicine. Dr. Follansbee served as a trustee and in various other capacities in the academy for many years and was president in 1918. Among other activities he has been president of the Ohio State Medical Association and of the Cleveland Medical Library Association. For several years he was a member of the House of Delegates of the American Medical Association, has been a member of the Judicial Council for fourteen years and chairman for eleven years.

## PENNSYLVANIA

**Hospital Superintendent Appointed.**—Dr. Ira A. Darling, superintendent of the Springfield State Hospital, Sykesville, Md., has been appointed superintendent of the Torrance State Hospital, effective January 15. He succeeds Dr. John I. Wiseman, acting superintendent, who was not a candidate for reappointment, according to the *Pennsylvania Medical Journal*. Before going to Maryland, Dr. Darling was on the staff of the Warren State Hospital for many years.

**Society News.**—Dr. Walter I. Lillie, Philadelphia, addressed the Lycoming County Medical Society, Williamsport, January 12 on "The Fundal Changes in Arterial Hypertension."——Dr. Temple S. Fay, Philadelphia, was the guest speaker at a meeting of the York County Medical Society, York, January 11 on "Why Do We Laugh?"——Drs. Chauncey L. Palmer, Pittsburgh, and James L. Whitehill, Beaver, discussed the Medical Service Association of Pennsylvania at a meeting of the Westmoreland County Medical Society at the Mountain View Hotel near Greensburg January 16, among other speakers.

### Philadelphia

**Society News.**—A symposium on endocrinology was presented before the Philadelphia County Medical Society January 10 by Dr. Emil Novak, Baltimore; Joseph A. Morrell, Ph.D., New Brunswick, N. J., and Dr. Edward Rose.——The Medical League of Philadelphia heard a symposium on arthritis January 8 presented by Drs. Ralph J. Melman, Abraham M. Rechtman and Mitchell Bernstein.——Dr. Barton R. Young, among others, addressed the Philadelphia Laryngological Society January 9 on "Recent Advances in Roentgen Ray Examination of the Larynx with Special Reference to Body Section Roentgenography."——Drs. Chevalier L. Jackson and George S. McReynolds Jr., among others, addressed the Laennec Society of Philadelphia January 9 on "Neoplastic and Non-Neoplastic Diseases of the Bronchi in Relation to the Anatomical Bronchopulmonary Segments."——Among the speakers before the Pathological Society of Philadelphia January 11 were Drs. Robert F. Norris and Leon Herman on "The Pathogenesis of Polycystic Kidneys" and Jacob W. Cutler, "A Scientific Method for Recording Erythrocyte Sedimentation Rate."

## RHODE ISLAND

**Society News.**—Dr. Charles P. Fitzpatrick, Howard, addressed the Providence Medical Association January 8 on "A State Hospital Physician Views Community Health in Rhode Island."——Dr. Hugh E. Kiene, Providence, addressed the Pawtucket Medical Association January 18 on "New Developments in Psychiatry."

**Residencies in Psychiatry.**—A two year term of study and research in psychiatry and neurology has been arranged by the educational advisory committee to the state department of social welfare, according to an announcement. Residencies will be granted to young physicians desiring to specialize, one year to be spent at the State Hospital for Mental Diseases, Howard, and one year at Butler Hospital, Providence, including three months at the Bradley Home for work with children. The residents will be entered as graduate students at Brown University and will receive academic credit. Dr. Charles P. Fitzpatrick, superintendent of the state hospital, is chairman of the committee and members are Drs. Arthur H. Ruggles, medical director, and Ira C. Nichols, acting clinical director of Butler Hospital; Charles Bradley, medical director of the Emma Pendleton Bradley Home, East Providence, and Harold W. Williams, clinical director at the state hospital.

## TENNESSEE

**Personal.**—Dr. Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine, Nashville, delivered the Eastman Memorial Lecture at the University of Rochester School of Medicine, Rochester, N. Y., December 12 on "A Consideration of Pathogenesis in Virus and Bacterial Infections."

**Society News.**—At a meeting of the Dyer, Lake and Crockett Counties Medical Society in Dyersburg January 3 the speakers, all of Dyersburg, were Drs. Percy A. Conyers, on acute conditions in the ear; Jesse Paul Baird, mortality in acute appendicitis, and William E. Anderson, treatment of pneumonia.

## VIRGINIA

**Postgraduate Course in Specialties.**—The University of Virginia Department of Medicine held its sixth annual postgraduate course in ophthalmology and otolaryngology December 5-8. Lecturers and clinicians were: Drs. Edmund B. Spaeth, Wilfred E. Fry, Alfred Cowan and James A. Babbitt, all of Philadelphia; William Thornwall Davis, Washington, D. C.; Charles D. Blassingame, Memphis, Tenn.; Edwin N. Broyles, Baltimore; Oscar Swineford Jr. and Henry B. Mulholland, Charlottesville.

**Portrait of Dr. Gray.**—A portrait of Dr. Alfred L. Gray, late professor of roentgenology and formerly dean at the Medical College of Virginia, Richmond, was presented to the college December 15 by Mrs. Malcolm W. Perkins, a niece of Dr. Gray. Drs. Thomas W. Murrell and William Lowndes Peple, Richmond, were the speakers at the ceremonies. Dr. Gray, who died Oct. 13, 1932, was associated with the college and with the old University College of Medicine for many years as dean of the latter, professor of physiology and professor of roentgenology.

## WEST VIRGINIA

**Personal.**—Dr. Donald L. Butterfield, Charleston, director of medical service for the West Virginia Department of Public Assistance, has resigned that office to accept a position as mine physician at Milburn.

**Society News.**—Dr. Frederick R. Whittlesey, Morgantown, addressed the Barbour-Randolph-Tucker County Medical Society, Philippi, December 21 on treatment of pneumonia.——Drs. Pat A. Tuckwiller and Archibald P. Hudgins, Charleston, addressed the Boone County Medical Society, Madison, December 14 on "Diagnosis and Treatment of Anemias" and "Leukorrheas of Pregnancy" respectively.——Dr. William Carl Kappes, Huntington, addressed the Cabell County Medical Society, Huntington, December 14 on "Nodular Goiter."——Dr. Victor W. Fischback, Cincinnati, discussed "Nasal Infections" at a meeting of the Kanawha Medical Society, Charleston, in December.

## PHILIPPINE ISLANDS

**Society News.**—A symposium on pulmonary tuberculosis was held at the Naval Hospital, Canacao, December 1, with the staffs of Sternberg Hospital (U. S. Army) and Quezon Institute as guests. Dr. Miguel Canizares delivered a paper on "Surgical Treatment of Pulmonary Tuberculosis," which was discussed by Capt. Joseph J. A. McMullin, U. S. Navy, Col. Adam E. Schlanser, U. S. Army, and Comdr. John P. Owen, U. S. Navy.

## PUERTO RICO

**Institute on Tuberculosis.**—The bureau of tuberculosis of the department of health of Puerto Rico held an institute on tuberculosis Nov. 23-26, 1939, in Rio Piedras. On the program were symposiums on bilateral pneumothorax, treatment of complications of artificial pneumothorax and the cooperation of the medical association in the antituberculosis campaign. Among other speakers were:

Dr. David E. Garcia, Rio Piedras, Drugs in the Modern Treatment of Tuberculosis.
Dr. Oscar G. Costa-Mandry, San Juan, Bacteriology of Tuberculosis.
Dr. Jacobo Simonet, San Juan, Differential Diagnosis of Diseases of the Chest.
Dr. Jerome S. Peterson, San Juan, Trends in Tuberculosis Mortality and Morbidity with Special Emphasis on Puerto Rico.
Dr. Jose Rodriguez Pastor, San Juan, What the Public Should Know About the Treatment and Diagnosis of Tuberculosis.

## GENERAL

**Social Hygiene Day.**—February 1 will be observed as the fourth National Social Hygiene Day, sponsored by the American Social Hygiene Association and the National Anti-Syphilis Committee. Meetings of various types have been planned around the slogan "Now More Than Ever—Guard Against Syphilis." A feature of the observances will be showings of the new film "With These Weapons."

**Directory of Medical Specialists.**—Issuance of the Directory of Medical Specialists Certified by American Boards has been set for February 15. It was originally planned for December 1938. The delay enables the Advisory Board for Medical Specialties to include the names of men certified during the late months of 1939 and thus have the lists complete up to January 1 of this year. Dr. Paul Titus, Pittsburgh, secretary of the advisory board, is in charge of the publication.

**Red Cross Classic Published in English.**—The American Red Cross announces that "Un Souvenir de Solferino," by Henri Dunant, the eyewitness account of the battle of Solferino in 1859 which is credited as one of the factors in the founding of the Red Cross, has been published in its first complete English edition. The translation was published in December as part of the observance of the seventy-fifth anniversary of the Red Cross. Dunant's experience in the battle inspired him to work toward formation of a neutral organization to reduce the sufferings of war. His account was originally published in 1862 and two years later sixteen European nations signed the Treaty of Geneva establishing an international Red Cross.

**Bacteriology Award to Dr. Kidd.**—At the annual meeting of the Society of American Bacteriologists in New Haven December 28-30, the Eli Lilly Award of a medal and $1,000 was presented to Dr. John G. Kidd of the Rockefeller Institute for Medical Research, New York. The award is made to a young man or woman under 31 years of age for outstanding contributions to bacteriology or immunology. Dr. Kidd, who has been a research assistant at the institute since 1934, received the honor for original work on animal tumors of virus etiology. He graduated from Johns Hopkins University School of Medicine in 1932. Charles Thom, Ph.D., of the U. S. Department of Agriculture, Washington, D. C., was elected president of the society; Dr. Oswald T. Avery, New York, vice president, and Ira L. Baldwin, Ph.D., Madison, Wis., secretary.

**Theobald Smith Award to Dr. Sabin.**—At the midwinter meeting of the American Association for the Advancement of Science in Columbus, Ohio, the Theobald Smith Award was presented to Dr. Albert B. Sabin, who recently went from the Rockefeller Institute for Medical Research, New York, to the University of Cincinnati College of Medicine. Dr. Walter B. Cannon, Boston, president of the association, made the presentation and Dr. Sabin described his research in a paper entitled "Constitutional Barriers to Involvement of the Nervous System by Certain Viruses." A native of Poland, Dr. Sabin is 33 years old and graduated from New York University College of Medicine in 1931. He was on the staff of the Rockefeller Institute from 1935 until his recent appointment as associate professor of pediatrics at the University of Cincinnati College of Medicine.

**Surgical Meeting in Florida.**—The fifth assembly of the United States Chapter of the International College of Surgeons will be held February 11-14 at Venice, Fla. The program includes a symposium on venom therapy to be presented by Drs. Thomas F. Wheeldon, Richmond, Va., and Paul T. Butler, Orlando, Fla.; Eugene Maier, Ph.D., Venice, and "Texas Jim" Mitchell, Sarasota, Fla. Among other speakers will be:

Dr. Temple S. Fay, Philadelphia, Refrigeration in Human Beings and Its Effect on Undifferentiated Cells, Particularly Related to Cancer.
Dr. Alberto Inclan, Havana, Cuba, Surgical Treatment of Giant Cell Tumors of Bones.
Dr. William E. Lower, Cleveland, Indications for and the Results of Ureteral Transplantation into the Rectosigmoid.
Bradley M. Patten, Ph.D., Ann Arbor, Mich., Microcinematographic and Electrocardiographic Studies of the First Heart Beats and the Beginning of the Circulation in Living Embryos.
Dr. Rudolph Nissen, Istanbul, Turkey, Reconstruction of the Ureter.
Dr. Edward J. McCormick, Toledo, Ohio, Present Social and Economic Trends and the Future of Surgery.

**Fraudulent Salesmen.**—A salesman who claimed to represent the "Paramount Uniform Company, 1238 North Meridian Street, Indianapolis," recently took an order for uniforms in the office of a physician in Lexington, Ky. A small deposit was paid, but the order was never received. Inquiry from the Indianapolis board of commerce revealed that there was no such street number and the firm name was not known. It was said that the Better Business Bureau of Indianapolis had received other letters concerning this man, who called himself Ross.——From Arkansas came a similar complaint. The salesman gave the name L. H. Ross and the firm name "Trenco Uniform Company, 87½ Hanover Street, Trenton, N. J." A deposit of $4.65 was paid on an order of $18.20. A letter of inquiry sent when the merchandise was not received was returned with the notations "Unknown," "Not at address given" and "Not in directory service."

## LATIN AMERICA

**Chilean Congress of Pediatrics.**—The third National Congress of Pediatrics of Chile will be held at Viña del Mar February 2-4. Subjects to be discussed are: medicosocial assistance to the preschool and the school child; infantile encephalopathies; the acute abdomen in the child, and medicosurgical treatment of infantile tuberculosis.

## CORRECTION

**Vitamin A in the Blood.**—In the article by Steininger, Roberts and Brenner in THE JOURNAL, Dec. 30, 1939, page 2381, in the last item in table 1, which refers to the article by Clausen and McCoord, the statement that the "rate of absorption of vitamin A is slower than that for carotene" should have been just the opposite, that is, that the "rate of absorption of carotene is slower than that for vitamin A."

In view of Marian S. Kimble's paper published in the *Journal of Laboratory and Clinical Medicine* in July 1939, attention has been called to the following statement in Steininger, Roberts and Brenner's paper: "With the exception of the work of Clausen and his associates, these studies have all been done in foreign countries." The authors state that the foregoing quotation was correct at the time their paper was submitted to THE JOURNAL.

# *Government Services*

### Internships in Public Health Service Hospitals

The United States Public Health Service announces that applications will be received for appointments as second year interns. Those eligible are physicians not over 30 years old who have graduated from accredited medical colleges and who have or will have completed by next June one year's internship at an approved hospital. Appointments will be offered immediately to be effective on or shortly after July 1 or sooner if vacancies exist and applicants are available. No written examination is required. It is especially desired to receive applications from physicians who are interested in the public health service as a career. Appointments will be made with the understanding that an opportunity will be afforded to take the next examination provided for by regulations for appointments as assistant surgeon. Persons desiring to make application should communicate at once with the Surgeon General, U. S. Public Health Service, Washington, D. C.

### Commissions in Medical Corps of Navy

Applications for commissions as medical officers in the U. S. Navy are now being received in the bureau of medicine and surgery, navy department. Examination for entrance will be held during the first week of May at the naval hospitals in Boston, Brooklyn, Philadelphia, Norfolk, Va., San Diego, Calif., and Mare Island, Calif., and at the Naval Medical Center, Washington, D. C. Applicants are required to be citizens of the United States between 21 and 32 years of age at the time of appointment, graduates of recognized medical schools and physically qualified. They must demonstrate their professional qualifications by written, oral and practical examinations embracing the subjects of general medicine, general surgery, obstetrics and gynecology, preventive medicine and jurisprudence. The physical and professional examinations usually require from three to four days for completion. Successful candidates are commissioned as assistant surgeons with the rank of lieutenant (junior grade) in the medical corps of the navy. An officer of this rank receives compensation of $2,699 a year if he has no dependents and $3,158 a year if he has dependents. A "Circular for the Information of Persons Desiring to Enter the Medical Corps of the United States Navy," including data pertaining to physical requirements, promotion, retirement and other matters, may be obtained by addressing the Surgeon General of the Navy, Navy Department, Washington, D. C.

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

Dec. 30, 1939.

### The Earliest Example of Canned Food

In the Museum of the Royal United Service Institution, London, is a glass tube containing roast veal taken from a can more than a hundred years old. The can, cut round with chisel and hammer, is also on view and is the earliest known example of canned food. It formed part of the stores taken by Sir William Parry in his arctic expedition of 1824 and was brought back unused. At the request of the International Research and Development Council, the museum sanctioned the opening of the can, so that a chemical and bacteriologic examination might be made of its contents. No trace of preservatives was found. The contents were found in perfect condition. Some of the meat was given without ill effects to a cat, and ten rats were fed on it for some days, providing a testimonial to its quality by putting on weight. Although a Frenchman invented the process of canning at the end of the eighteenth century, it was left to the English firm of Donkin & Hall to make practical use of his discovery. They set up in business in 1811 and two years later their products were being used by the navy and army. In 1814 Sir Joseph Banks, president of the Royal Society, wrote in praise of the nutritious qualities of their "embalmed provisions." In this year also the firm supplied the expedition to Baffin's Bay, which Parry joined as a lieutenant. Five years later on his first voyage to discover the northwest passage, canned meat, soup and vegetables formed a valuable aid in combating scurvy.

### Water Sold at Food Prices

In his recently published annual report, for 1938, Sir Arthur MacNalty, chief medical officer of the Ministry of Health, stated: "There is a general tendency to incorporate excess of moisture in food, particularly dairy products, and thus, in effect, to sell water at the price of food." He stresses the need for a system of food standards, which already exists for butter and margarine. In the case of compound foods there has always been a tendency to increase the amount of the cheaper ingredients gradually at the expense of the more costly ones. Probably the most flagrant cases of misleading labels concerns foods stated to have a high vitamin content. For almost all foods no legal standards exist, but the consumer has some protection under the Sale of Food and Drugs Act. A vender can be prosecuted for selling an article of food or drink which is not "of the nature, substance or quality demanded or for selling any article of food or drink which has been rendered injurious to health." But unfortunately the practices mentioned do not come within the purview of these acts.

### The Hospitals in Wartime

The evacuation of the great hospitals in the cities for the safety of the patients and to make room for the large number of casualties expected from air raids has been described in previous letters. Such raids have not occurred but they remain possible and therefore the elaborate organization for dealing with them has to be kept ready. There were 6,334 beds in the twelve teaching hospitals of London when the war began. Of these, 2,450 are now reserved for casualties, 1,185 accommodate the sick and 2,699 are closed. These beds were closed because the minister of health decided that the patients could be treated in greater safety outside London. The evacuation of the hospitals has produced special difficulties. Thus at an inquest on a man who died from an accident in which his chest was crushed it was stated that fractures of the ribs could not be diagnosed because the x-ray apparatus was not available. The surgical treatment of pulmonary tuberculosis has been interrupted because the special hospitals where the operations are performed have been deprived both of thoracic surgeons and of special instruments, while the outlying hospitals to which the removal has taken place are not yet in a position to receive the patients. There is a shortage of beds for nonpulmonary tuberculosis. Another ill result is that the teaching of medical students has suffered. The London hospitals have for generations been adapted to this purpose, but in the hospitals around London to which the students and the staff have been moved and over which they are scattered, the facilities for teaching are poor.

In a joint letter to the *Times*, the presidents of the Royal Colleges of Physicians, Surgeons and Obstetricians advocate the view that the sooner the London hospitals are put into commission the better. They admit that the beds reserved for the casualties of air raids must be kept empty, and segregated as far as possible and organized for their special service. But they have impressed on the minister of health the desirability of releasing for the service of the civilian sick a large number of the beds now closed as a precautionary measure. Anything like full recommissioning cannot take place until it is decided that the risk of extensive casualties from air raids is no longer to be feared.

### Electropyrexia in the Treatment of Disease

In opening a discussion at the Medical Society of London on induced pyrexia, Dr. F. J. Nattrass said that his principal experience with the method was in the treatment of dementia paralytica. The electrical method of producing pyrexia had great advantages over the malaria treatment. The fact that many different methods had proved effective suggested that the pyrexia was the essential element. It could no longer be contended that there was anything specific about malaria. He used a small radiant heat cabinet for the production of short waves, which had the advantage that a continuous record of the rectal temperature could be maintained. The published results appeared to show that the results with pyrexia produced by physical agents were superior to those produced by malaria: the patients were not made so ill, and the mortality was lower. In the treatment of dementia paralytica he had no death in 213 cases, while the mortality attributed to benign malaria, though seldom more than 3 or 4 per cent under organized arrangements, had otherwise been as high as 10 per cent.

The general principle was to persist until a maximum clinical response was obtained. His practice was to give from four to six fevers of 106 F., each for eight hours. This must be supplemented by full antisyphilitic treatment, especially with tryparsamide and bismuth compounds, but it was dangerous to inject drugs during the height of the fever. The fever soon caused a fall in the cell count and protein of the cerebrospinal fluid, but the change in the Wassermann reaction and colloidal gold curve was very slow. A sedative should be given to keep the patient comfortable, and the water intake should be sufficient to compensate for the loss by sweating. Not all cases of dementia paralytica were suitable for electropyrexia. The patient must be capable of cooperation or at least not be resistant. It might well be that malaria was still the method of choice for severely demented patients.

#### GONORRHEA AND OTHER DISEASES

Fever was more potent in generalized gonococcic infection than in primary gonorrhea. It was usually reserved for resistant cases, those with local extension in the male and female organs, and gonococcic arthritis. It probably had a lethal action on the gonococcus. The best results were obtained by temperatures near the limit of safety (106 F.), though lower temperatures might cure. The resistance of different strains of the gonococcus

varied. In 92 per cent of the cases, cures had been obtained with a single course of ten hours' fever, which was a practicable and safe routine.

Benefit from fever had been established and claimed in a number of other diseases. The physical signs of tabes dorsalis were not influenced, but symptomatic improvement was said to be marked if antisyphilitic treatment also was given. He had not, however, been impressed in twelve cases that he had treated. Neymann's results in syphilitic optic atrophy suggested a further trial. Gummatous cerebrospinal meningitis was amenable to pyrexia treatment though resistant to chemotherapy. But no case had been made for pyrexia treatment in early syphilis. Fifty per cent of remissions had been claimed in asthma; relapse was usual but remission could be repeated. In some cases of chorea, movements had been promptly checked and the total duration reduced. The presence of carditis did not contraindicate the treatment. But he doubted whether pyrexia was indicated in chorea, which responded so well to simpler measures.

## PARIS

*(From Our Regular Correspondent)*

Dec. 16, 1939.

### Center of Oxygen Therapy

Léon Binet was better qualified than any one else to create the center of oxygen therapy at the Hôpital Necker, where oxygen is not only available to the public but where a well equipped laboratory is found for the study of oxygen and all gases related to it. Binet has conducted for a long time experimental and therapeutic researches on oxygen, on anoxemia and the biologic reactions which it causes and on hyperoxygenation. The center will render important services if poison gas is used by enemy countries against the civilian population. It was founded chiefly for cardiac and pulmonary diseases and those of the respiratory organs. According to Binet, oxygen is the basic therapy for all dyspneas. Its therapeutic use requires perfect equipment, as in many cases perfect timing with the respiratory movements must be achieved. The apparatus must also be simple and without mechanical complications so that it can be used conveniently and without fatigue to the patient. For application of oxygen lasting from fifteen to twenty minutes an hour a tent is needed. For a still longer treatment a mask is employed which is open at the top and is made of a cellophane sheet covering the face. When artificial respiration is employed, a thoracic band which exerts compression and decompression enables exact synchronization between respiration and the arrival of the oxygen in the bucconasal mask. Another arrangement consists of an artificial lung which is portable and in sections and is an improvement over Drinker and Roy's because it introduces automatic alternation between the expansion of the thorax and the absorption of oxygen. Binet uses gaseous oxygen in preference to liquid oxygen. The latter has no special virtues to commend it, as it is ultimately converted into gas and, besides, furnishes a fire risk.

### Professional Secrecy

In France the professional secret has been thus far an absolute medical obligation. The part of the Hippocratic Oath which prohibited the disclosure of a patient's secrets was regarded as the cornerstone of the confidential relations between physician and patient. In the past the physician was under obligation, for example, to state the cause of death as well as to report epidemic diseases. But, summoned into court, he could and had to refuse to answer questions relating to professional secrets involved. If he violated his obligation he could be prosecuted either by the public prosecutor or by interested persons. During the last few years, however, the rigid rule of professional secrecy has had to be relaxed, for reasons of public policy, in two important aspects: first, in matters of criminal abortion, in which the physician may now reveal without reservations the facts known to him; secondly, in the prophylaxis against syphilis. Article 2 of a recent law provides that every physician who learns that a person of either sex afflicted with a contagious venereal disease has communicated this disease to one or more persons must report the facts to the health department. In such cases he may also give testimony in court. The law which requires the physician to report makes him a valuable assistant in the fight against venereal diseases. In medical circles these provisions of the law will be heatedly discussed until it is conceded that it is the first duty of a physician to suppress disease and that hence the traditional attitude of professional reserve needs to be abandoned in the interest of public health.

### Criminal Abortions in France

The low French birth rate constitutes a serious danger to the preservation of the nation. The number of infants born alive, which amounted to 907,000 in 1886, had fallen to 630,000 fifty years later. In 1938 births (610,000) were fewer than deaths (650,000) by about 40,000. France is the only civilized country in which coffins are more numerous than cradles. Criminal abortion is undoubtedly one of the most important causes of this tragic situation. In 1905 Dolé Doléris pointed out that in the maternity wards of Paris there were more cases of self-provoked abortion than of confinement cases. Physicians and sociologists for a long time have been stressing this national peril and calling for laws against criminal abortion. The war of 1914 aggravated the situation. In 1923 the French parliament adopted the draft of a law elaborated by medical committees and other organizations, among which the National Alliance for the Growth of the French Population was prominent. The law of 1923 organized the supervision of maternity homes, many of which were no better than abortion factories masked under medical pretensions. The law prohibited contraceptive propaganda and provided that crimes of abortion no longer be decided by juries too often subject to emotional bias but be tried before judges. Greater severity was expected of professional magistrates than of sentimental juries. The French senate went so far as to read into the laws an exceptional provision in which full pardon was accorded to the defendant if she disclosed the author of the abortion. Moreover, the right of professional secrecy on the part of physicians, which in France practically possesses divine sanction, was revoked. However, these two provisions were abandoned. This weakened the effects of the law. On the other hand, the judges showed themselves too often as much inclined to leniency as were formerly the juries. In consequence, the number of those condemned and even those charged with the offense remained greatly out of proportion with that of abortions. Besides, in nine out of ten cases the penalty imposed did not exceed several months in prison.

Mazel and Robin, who have recently treated this subject in the *Journal de médecine de Lyon*, refrain from giving figures. However, everybody agrees that it is higher than the number of annual births, which amount to 600,000. Criminal abortion is found at all social levels and is from five to six times more frequent among married women than among unmarried. The third child in the family is usually the victim, clearly a proof of the economic implications of the situation. The disastrous effect of criminal abortions on the female genital organs cannot be exaggerated.

In the face of this serious situation, a law was decreed July 29, 1939, increasing the penalties against criminal abortion and intensifying action against physicians, midwives and others guilty of this practice. It minutely regulated the procedure in cases of therapeutic abortion. It granted the right

of direct summoning to the medical syndicates and the syndicates of midwives. It canceled the obligations of professional secrecy in matters of criminal abortion. It prohibited the sale of abortifacients except to pharmacists and reserved to authorized laboratories the biologic diagnosis of pregnancy. It vigorously combated the advertising of contraceptives and strengthened the control of maternity homes. However, the law balked at the provision previously adopted and abandoned which exempted from penalty women who disclosed the abortionist, fearing lest it might be abused for calumnious purposes. Revocation of this provision deprived physicians of the means of bringing abortionists to trial while protecting their clients. It is expected that the new law will save at least 100,000 lives. In order to make any real headway, however, permanent measures must be taken to protect and aid the mothers. Another law, instituting the family code, though still incomplete, aims at the improvement of the economic side of the situation.

### Infant Mortality

Between 1925 and 1938 the infant mortality in France fell from 39.4 to 35 per thousand live births. The mortality rate during the first ten days of life fell from 18.7 to 16.3 per thousand in the course of the first year. In the course of the second year it fell from 18.6 to 13.9 per thousand. This decrease applies especially to the summer months. Gastroenteritis has decreased 84 per cent since 1906. On the other hand, diseases of the respiratory organs have receded since that time only by 17.1 per cent. According to Lesage and Moine, who presented these statistics to the Academy of Medicine, France loses every year more than 100,000 infants, about one third of all the births, through negligence all the more culpable in that the birth rate is declining. In the years from 1925 to 1938, France's birth rate fell from 19 to 14.6 per thousand.

### Personals

The Académie de médecine has lost in Auguste Pettit, president of the Societé de biologie of Paris, one of its most eminent members. It has nominated two new members: Jean Gautrelet, director of the health laboratory at the Ecole des hautes études, and Léon Babonneix. At the University of Paris, honorary degrees were conferred on Sir Humphry Rolleston, honorary professor at the University of Cambridge, and on Philippe Roy, who for many years represented Canada in Paris and who had started out in his own country as a rural physician.

## BERLIN

*(From Our Regular Correspondent)*

Dec. 9, 1939.

### The Treatment of Poliomyelitis with Convalescent Serum

According to a recent publication of the national health department, serum therapy in poliomyelitis is at present the only method that promises a measure of success. However, serum therapy is useless if paralysis has already set in. Professor Gildemeister of the Robert Koch Institute investigated the problem. Four groups of serums were used. It was found that the serums of patients with nonparalytic poliomyelitis in many cases were more effective than those with paralysis. On the other hand, persons in close contact with poliomyelitic patients furnished the worst prophylaxis. Until a more effective therapy is discovered, serum therapy will be used.

### Miscarriages Among Tobacco Workers

Fifteen female medical students of the University of Heidelberg investigated the miscarriages among tobacco workers. The study was based on sick fund data and on 671 factory workers who did not smoke themselves but came into direct contact with tobacco. The factory buildings were situated in the vicinity of Heidelberg and were more or less hygienically unobjectionable.

The statistics of miscarriages varied greatly in different tobacco plants but, occupationally considered, the figures for the tobacco industry and the metal industry were practically the same, both much higher than those for all the other industries studied, as shown in the accompanying table.

*Miscarriages Among Workers in Various Industries*

| Occupation | Number of Women Investigated | Cases | Miscarriages, per Cent |
|---|---|---|---|
| Tobacco industry | 6,500 | 72 | 1.1 |
| Metal industry | 337 | 4 | 1.2 |
| Leather industry | 693 | 5 | 0.75 |
| Hotel supplies industry | 969 | 7 | 0.7 |
| Textile industry | 392 | 2 | 0.51 |
| Foods and table luxuries | 1,051 | 4 | 0.4 |
| Domestic service | 3,650 | 13 | 0.35 |

In spite of these figures, the report states that injuries from tobacco are not to be regarded as essentially causative of miscarriages. It is assumed that, in the majority of miscarriages noted, abortions, injuries or other factors were involved. Similarly, the relatively small families of female tobacco workers are not to be attributed to tobacco but chiefly to a reluctance to bear children and to the unfavorable social conditions.

### News of the Universities

As reported in THE JOURNAL Nov. 25, 1939, page 1977, all German universities were closed with the exception of five. Several others have since been reopened because of "the quick victorious campaign in Poland," which released more teachers and students. The medical faculties in Breslau, Göttingen, Erlangen, Marburg and the German university in Prague are now again in operation. More universities have been reopened to assure also in war times the availability of trained men for academic callings, especially those necessary for the defense of the country. For the present, the semester plan has been abandoned for a threefold division of the academic year. The introduction of the trimester plan is intended to accelerate the academic output. For students now under colors, intercalary semesters are to be arranged after the war, as was done after the World War. They are also to have preferential standing in the university examinations.

### Obituaries

Prof. Anton von Eiselsberg, for many years professor of surgery at the University of Vienna, died October 25 at the age of 79, in consequence of an accident. The university lost in him one of her best known scholars. Eiselsberg, a descendant of an old Austrian family, studied in Vienna, Würzburg, Zurich and Paris. He studied with Billroth both as a student and for six years as his assistant. He was appointed to a professorship first at Utrecht in 1893 and then at Königsberg in 1896 and was called to Vienna in 1901 as director of the first surgical clinic of the university. In 1931 he retired. A tireless teacher, he trained a large body of distinguished surgeons. His scientific contributions touch every field of surgery. His scholarship found its complement in a personality of great charm and noble character. The universities of Leyden, Athens, Edinburgh and Geneva conferred honorary degrees on him.

Prof. Hans Horst Meyer died in Vienna October 8 at the age of 86. The development of pharmacology is inseparably associated with his name. Meyer was born in East Prussia, became a student of Max Jaffé at Königsberg in physiology

and became an assistant of Oswald Schmiedeberg in Strasbourg. In 1881 he began his university career there in pharmacology and was called the same year to the professorship in Dorpat. In 1884 he was called to Marburg, where he served twenty years. During this time he lectured in England and the United States. In 1904 he went to the University of Vienna, where he served until he retired in 1924. Meyer is to be credited with establishing an intimate association between pharmacology and biology, pathology and the clinic. In conjunction with Gottlieb in Heidelberg and later with his student and successor E. P. Pick, he published the textbook on "Experimental Pharmacology as the Basis of Drug Treatment," which went through several editions and was translated into English. Honorary degrees were conferred on him by Vienna, Königsberg, Marburg, St. Andrews, Edinburgh and other institutions. He possessed a friendly personality and was an excellent teacher and department head.

## BUCHAREST

*(From Our Regular Correspondent)*

Dec. 17, 1939.

### Increase in the Price of Drugs

Owing to transportation difficulties and the rise in the price of raw materials, the price of drugs and proprietary medicines has risen. The price of iodine has trebled. Whereas a tube of sulfapyridine was sold in August for 280 lei ($2) it now costs 360 lei ($2.60). Dressing materials are 50 per cent more costly. Some proprietary medicines for which there is a great demand cannot be had at all. Our home manufacturing chemists are working overtime to cope with the demand.

### The New Stomatologic Clinic in Bucharest

The latest addition to the ever increasing number of medical institutions in the capital city, Bucharest, is the stomatologic clinic, which has been opened amid great solemnities. The clinic, which is equipped in the most modern way, will serve the purpose of training students in stomatologic science and at the same time accommodate and treat stomatologic patients. The institute forms a section of the famous Spitalul Coltea. The professorial chair in the new clinic has been filled by Dr. Daniel Theodorescu.

### The National Surgical Congress

The tenth National Surgical Congress in Bucharest was held November 5-7 under the chairmanship of Prof. Amza Jianu. In his address Professor Jianu memorialized Prof. Toma Jonescu, founder of the Rumanian surgical school. Professors Nicolau and Borza read a treatise on Nicolas-Favre disease. Bagdasar and Firica read a paper on the surgery of medullary compression, and Placineau and Porumbaru read a paper on the role of the endocrines in surgery. Next year the congress will have as chairman the newly appointed minister of public health, Professor Hortolomei. The subjects will be vitamins in surgery, surgical shock and surgery of the spleen.

### The New Public Health Minister

With the change of the Rumanian government, the portfolio of the ministry of public health passed into new hands. King Carol II appointed to this post Prof. Dr. Nicolae Hortolomei, director of the surgical urologic clinic of the Bucharest university. In medical circles the appointment met with sincere favor. The predecessors of this minister were not medical men, although they filled their position to the complete satisfaction of the medical profession. To the post of vice minister M. T. Popa, managing director of the hospitals of the National Sickness Insurance Society, has been appointed. He filled the position as a vice minister also during the Jorga government.

### Accidents with Trivalent Arsenic Compounds

Dr. Selegeanu Nicolae, of Bucharest, at a recent meeting of the local medical society discussed the causes, prevention and treatment of the immediate, early and delayed reactions associated with the intensive arsenical treatment of syphilis. The treatment should take into account the reaction to previous injections, whether the disease is recent and whether there is any indication of a reaction on the part of the nervous system or viscera. The urine should be examined before every injection, and special caution is necessary if it contains bile pigments, albumin or much sediment. The practice of using big doses (ampules containing 4.5 Gm. of neoarsphenamine intended for veterinary purposes), dissolving the whole content and distributing it among six to nine persons, is a dangerous proceeding. The injection should always be made with extreme slowness, watching for the least untoward sign. The physician, realizing his responsibility, should keep a record of cases written in full to date, and a solution of epinephrine and sodium thiosulfate should always be at hand to combat any sign of intolerance.

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## *Marriages*

ALFONSO C. SMUDA, Camden, N. J., to Miss Jane Frances Reed, of Gloucester City, at Elkton, Md., in December 1939.

FREDERICK GRAY MCCONNELL, Gate City, Va., to Miss Anabel Hope Shawkey, of Charleston, W. Va., in October 1939.

LAURENCE STEPHENSON WOODLEY, Andalusia, Ala., to Miss Edith Bernice Bagwell at Fairfield in October 1939.

HARDY HORACE SMITH, Fort Smith, Ark., to Mrs. Mildred Wright Williams, of Kansas City, Mo., Nov. 28, 1939.

WILLIAM GORDON ROBINSON, Hart, Mich., to Miss Elizabeth L. Lincoln, of Fergus Falls, Minn., Aug. 4, 1939.

KENT L. WATTLEWORTH, Newton, Ill., to Miss Jean Hine, of Indianapolis, in Frankfort, Ind., Aug. 17, 1939.

ROY FRANK SPAULDING, Decherd, Tenn., to Miss Edna Eleanor Nunnery, of Arcola, Miss., Oct. 8, 1939.

CLARENCE J. SALOON, LaFayette, La., to Miss Pauline Womack, of New Orleans, in November 1939.

DAVID ROMULUS THOMAS JR., Augusta, Ga., to Miss Adelaide S. Croft, of Aiken, S. C., in October 1939.

WARREN E. WHEELER, Lansing, Mich., to Miss Margaret Stellmeyer, of Attleboro, Mass., recently.

HOWARD S. WILLIAMS JR., Indianapolis, to Miss Marjorie Duncan at Lafayette, Ind., Oct. 20, 1939.

HARRY N. WAGGONER, Dyersburg, Tenn., to Miss Mary Davis, of Mayfield, Ky., Dec. 9, 1939.

JAMES M. WILSON, Durham, N. C., to Miss Mary Scoggin, of South Boston, Va., Nov. 11, 1939.

RICHARD N. SHERWIN, Hillsboro, Ore., to Miss Glenrose Whitney at St. Helens, Nov. 4, 1939.

WILLIAM D. WARRICK, Birmingham, Ala., to Miss Alice Royston, of Oak Park, Ill., recently.

RUFUS D. WRIGHT, Leighton, Ala., to Miss Rena Buxton, of Lancing, Tenn., Nov. 30, 1939.

VERNON A. NOBLE to Miss Hildegarde Thompson, both of Lima, Ohio, in October 1939.

GEORGE W. WALLACE, Biloxi, Miss., to Miss Mona Atkinson, of Gulfport, in October 1939.

ALBERT H. STAHMER to Miss Margaret Lemke, both of Wausau, Wis., Oct. 12, 1939.

ROBERT W. MASON to Miss Lorraine Miller, both of Marshfield, Wis., Oct. 17, 1939.

SAMUEL STEINBERG to Miss Pauline Gold, both of Philadelphia, Nov. 5, 1939.

AMY LOUISE HUNTER to Mr. F. G. Wilson, both of Madison, Wis., Oct. 19, 1939.

EPHRAIM SCHARFMAN, Brooklyn, to Miss Yevette Goldforb, Nov. 23, 1939.

MICHAEL SKOVRON to Miss Jean Aitken, both of Erie, Pa., Oct. 28, 1939.

# Deaths

**Paul Garfield Weston,** Jamestown, N. Y.; Medico-Chirurgical College of Philadelphia, 1908; member of the Medical Society of the State of New York and the American Association of Pathologists and Bacteriologists; associate professor of pathology and bacteriology at the Temple University School of Medicine, Philadelphia, 1908-1910; formerly pathologist to the State Hospital, Warren, Pa.; director of the Municipal Laboratory; pathologist to the Jamestown General Hospital and the Woman's Christian Association Hospital, Jamestown, and the Brooks Memorial Hospital, Dunkirk; aged 58; died, Dec. 18, 1939, of coronary thrombosis.

**William Irving Sirovich,** New York; Columbia University College of Physicians and Surgeons, New York, 1906; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; member of Congress from the fourteenth congressional district for many years; formerly commissioner of child welfare; member of the advisory board of the National Child Welfare Association of America; formerly bank president; at one time superintendent of the Peoples Hospital; aged 57; died, Dec. 17, 1939.

**Robert Percy Smith,** Portland, Ore.; College of Physicians and Surgeons, Baltimore, 1891; in 1905 member of the House of Delegates of the American Medical Association; member of the American Psychiatric Association; past president of the state board of medical examiners of Washington; served during the World War; at one time served with the U. S. Public Health Service and the Veterans Bureau; aged 71; died, Nov. 29, 1939, of cerebral hemorrhage.

**Joseph Warren Bauman** ✠ Major, U. S. Army, retired, San Mateo, Calif.; University of Pennsylvania Department of Medicine, Philadelphia, 1896; veteran of the Spanish-American and World wars; entered the medical corps of the U. S. Army as a major in 1920 and retired in 1933 for disability in line of duty; member of the Washington State Medical Association; aged 69; died, Dec. 3, 1939, in the Letterman General Hospital, San Francisco.

**Rudolph Angus Nichols Jr.** ✠ Richmond, Va., University of Virginia Department of Medicine, Charlottesville, 1926; fellow of the American College of Surgeons; associate in anatomy at the Medical College of Virginia; on the staffs of the Sheltering Arms Hospital, Stuart Circle Hospital, Grace Hospital, Memorial Hospital, St. Philip Hospital and the Retreat for the Sick; aged 39; died, Dec. 10, 1939.

**Charles Augustus Simpson** ✠ Washington, D. C.; George Washington University School of Medicine, Washington, D. C., 1906; professor of dermatology and syphilology at his alma mater; dermatologist to the Emergency Hospital, Episcopal Hospital, Gallinger Hospital, George Washington University Hospital and the Children's Hospital; aged 57; died, Dec. 9, 1939, in Lake Worth, Fla.

**George L. Vieweg Sr.,** Wheeling, W. Va.; College of Physicians and Surgeons, Baltimore, 1902; member of the West Virginia State Medical Association; served during the World War; for many years on the staffs of the Ohio Valley General Hospital and the Wheeling Hospital; medical director of the Ohio County Tuberculosis Sanatorium; aged 58; died, Nov. 30, 1939, of heart disease.

**Frederick Herman Neher** ✠ St. Paul; Marquette University School of Medicine, Milwaukee, 1915; fellow of the American College of Surgeons; served during the World War; member of the staff of St. Joseph's Hospital; member of the visiting staff of St. Luke's and Charles T. Miller hospitals; aged 48; died, Dec. 3, 1939, of septicemia.

**John Burgess Lynch,** New York; University of the City of New York Medical Department, 1887; formerly assistant professor of ophthalmology at his alma mater; formerly consulting surgeon to the Nyack (N. Y.) Hospital, St. Francis Hospital and the Herman Knapp Memorial Eye Hospital; aged 78; died, Dec. 2, 1939, of coronary thrombosis.

**Samuel Osborn** ✠ Lansing, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; fellow of the American College of Physicians; past president of the Ingham County Medical Society; aged 73; died, Dec. 4, 1939, at the Edward W. Sparrow Hospital of coronary thrombosis following a prostatic resection.

**Edward Burnett Willingham** ✠ Paducah, Ky.; University of Louisville Medical Department, 1892; member of the county board of health and formerly county health officer; past president of the McCracken County Medical Society; served during the World War; president of the Riverside Hospital staff; aged 69; died, Dec. 6, 1939.

**Ray Stanton Norris,** Sanatorium, Texas; University of Texas School of Medicine, Galveston, 1922; member of the State Medical Association of Texas and the American College of Chest Physicians; on the staff of the State Tuberculosis Sanatorium; aged 39; died, Dec. 8, 1939, of tuberculosis.

**Emil Francis Kramer,** Yonkers, N. Y.; Fordham University School of Medicine, New York, 1920; member of the Medical Society of the State of New York; on the staff of St. Joseph's Hospital; aged 42; died, Dec. 1, 1939, in the Fordham Hospital, New York, of injuries received in an automobile accident.

**Alfred Frank Hewitt,** Stamford, Conn.; Syracuse (N. Y.) University College of Medicine, 1913; member of the Connecticut State Medical Society; served during the World War; aged 48; on the staff of the Stamford Hospital, where he died, Dec. 20, 1939, of bilateral hydronephrosis with uremia.

**Charles B. Gant** ✠ Graham, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1900; served during the World War; past president of the Young County Medical Society; on the staff of the Graham Hospital; aged 69; died, Oct. 24, 1939, of cerebral hemorrhage.

**Clyde Dale Pence** ✠ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897; for many years on the staff of the West Side Hospital; at one time editor of the *Illinois Medical Journal;* aged 71; died, Dec. 1, 1939, of chronic myocarditis.

**Jasper Andrew Reynolds** ✠ Chattanooga, Tenn.; Indiana University School of Medicine, Indianapolis, 1924; fellow of the American College of Surgeons; served during the World War; on the staff of the Erlanger Hospital; aged 47; died, Dec. 7, 1939, of acute lymphatic leukemia.

**Robert Maxwell Harbin,** Rome, Ga.; Bellevue Hospital Medical College, New York, 1888; member of the Medical Association of Georgia; fellow of the American College of Surgeons; part owner of a hospital bearing his name; aged 75; died, Dec. 12, 1939, of pneumonia.

**Cyrus Hilary Anderson** ✠ Elgin, Ill.; Missouri Medical College, St. Louis, 1898; formerly managing officer of the East Moline (Ill.) State Hospital and the Anna (Ill.) State Hospital; on the staff of the Elgin State Hospital; aged 70; died, Dec. 18, 1939, of coronary thrombosis.

**Harrison Adams Greaves,** Philadelphia; Medico-Chirurgical College of Philadelphia, 1902; served during the World War; for many years on the staff of St. Mary's Episcopal and the University of Pennsylvania hospitals; aged 75; died, Dec. 14, 1939, in Browns Mills, N. J.

**Henry Thomas Hotchkiss,** Brooklyn; Long Island College Hospital, Brooklyn, 1891; formerly diagnostician for the department of health; member of the Medical Society of the State of New York; for many years on the staff of St. John's Hospital; aged 76; died, Dec. 18, 1939.

**Frank S. Whitman,** Belvidere, Ill.; Hahnemann Medical College and Hospital, Chicago, 1872; member of the Illinois State Medical Society; formerly mayor and bank president; at one time managing officer of the Elgin (Ill.) State Hospital; aged 90; died, Dec. 10, 1939.

**Laban Franklin Robbins,** Ashland, Ky.; Kentucky School of Medicine, Louisville, 1889; Homeopathic Medical College of Missouri, St. Louis, 1901; Eclectic Medical Institute, Cincinnati, 1904; member of the Kentucky State Medical Association; aged 75; died, Dec. 9, 1939.

**Eugene Merrill Desaulniers,** Montreal, Que., Canada; School of Medicine and Surgery of Montreal, 1895; at one time school commissioner and mayor of Saint Lambert; formerly member of the Quebec legislature for Chambly County; aged 71; died, Dec. 6, 1939.

**Clarence Ignatius McCormick** ✠ Kansas City, Mo.; St. Louis University School of Medicine, 1919; on the staff of St. Joseph Hospital; aged 46; died, Dec. 7, 1939, in the Veterans Administration Facility, Excelsior Springs, of hypertensive heart disease.

**William Marion Stearns,** Chicago; Chicago Homeopathic Medical College, 1880; fellow of the American College of Surgeons; aged 83; was killed, Dec. 1, 1939, in Evanston, Ill., when struck by an automobile while crossing the street.

**Osher Gordon** ✠ Passaic, N. J.; Eclectic Medical College of the City of New York, 1898; College of Physicians and Surgeons, Baltimore, 1899; on the staff of the Beth Israel Hospital; aged 74; died, Dec. 5, 1939, of heart disease.

**William D. Karterman,** Klingerstown, Pa.; Jefferson Medical College of Philadelphia, 1889; member of the Medical Society of the State of Pennsylvania; aged 76; died, Dec. 1, 1939, in the Geisinger Hospital, Danville.

**Henry William Lang,** Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; served during the World War; aged 62; died, Dec. 3, 1939, of hypostatic pneumonia.

**Earl Brooks Gilbert** ⊕ Scottdale, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1920; on the staff of the Henry Clay Frick Memorial Hospital, Mount Pleasant; aged 46; died, Dec. 1, 1939.

**George Pressly Neel,** Greenwood, S. C.; Jefferson Medical College of Philadelphia, 1888; aged 73; formerly on the staff of the Greenwood Hospital, where he died, Dec. 3, 1939, of cardiovascular renal disease.

**Henry Herman Olsen,** Wichita, Kan.; University of Kansas School of Medicine, Kansas City, 1917; served during the World War; aged 48; died, Dec. 8, 1939, of cerebral hemorrhage and pernicious anemia.

**Samuel Sebastian Markell,** Brooklyn; Long Island College Hospital, Brooklyn, 1907; aged 53; died, Nov. 8, 1939, in the Hudson County Tuberculosis Hospital, Jersey City, N. J., of pulmonary tuberculosis.

**William C. Duddenhausen,** Bay View, Mich.; Louisville (Ky.) Medical College, 1901; aged 60; died, Dec. 7, 1939, in the Lockwood General Hospital, Petoskey, of pulmonary embolism and bronchopneumonia.

**Annie Esther Barron Harrison,** Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; aged 67, died, Dec. 3, 1939, of coronary thrombosis.

**John A. James,** Rural Valley, Pa.; Medico-Chirurgical College of Philadelphia, 1894; aged 70; died, Oct. 11, 1939, in the Armstrong County Hospital, Kittanning, of chronic nephritis and arteriosclerosis.

**Samuel Huston Miller,** Columbus, Ohio; Temple University School of Medicine, Philadelphia, 1918; served during the World War; aged 51; died, Dec. 9, 1939, of a skull fracture received in a fall down stairs.

**Russell H. McClure** ⊕ Elyria, Ohio; Western Reserve University Medical Department, Cleveland, 1904; on the staff of the Elyria Memorial Hospital; aged 59; died, Dec. 1, 1939, of heart disease.

**Alexander Scaggs,** Lovington, Ill.; Barnes Medical College, St. Louis, 1906; on the staff of the Decatur and Macon County Hospital, Decatur; aged 68; died, Dec. 4, 1939, of acute pulmonary edema.

**William Jones Love,** Birmingham, Ala.; Medical College of Alabama, Mobile, 1893; member of the Medical Association of the State of Alabama; aged 68; died, Dec. 11, 1939, of lobar pneumonia.

**Elmer Ellsworth Lake,** Hampstead, N. H.; University of Vermont College of Medicine, Burlington, 1892; member of the New Hampshire Medical Society; aged 75; died, Dec. 6, 1939.

**Halvor C. Hanson,** Chicago; Rush Medical College, Chicago, 1903; on the staff of the Lutheran Deaconess Hospital; aged 58; died, Dec. 10, 1939, of arteriosclerotic heart disease.

**Harry Powell Martin,** Newark, Ohio; Eclectic Medical Institute, Cincinnati, 1902; aged 65; died, Dec. 9, 1939, in the City Hospital of injuries received in an automobile accident.

**Max Erdheim** ⊕ Brooklyn; Fordham University School of Medicine, New York, 1913; on the staff of the Israel-Zion Hospital; aged 57; died, Dec. 9, 1939, of coronary thrombosis.

**John Abel Lowry,** Huntsville, Mo.; University of Missouri School of Medicine, Columbia, 1879; aged 86; died, Dec. 1, 1939, of intestinal obstruction and carcinoma of the liver.

**Frederick James Kirk,** Gananoque, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1892; formerly a practitioner in Brooklyn; aged 72; died, Dec. 12, 1939.

**Albert B. Lewis,** Hamilton, Kan.; Medical College of Indiana, Indianapolis, 1882; aged 82; died, Oct. 28, 1939, in St. Mary's Hospital, Emporia, of hypostatic pneumonia.

**Irwin Huebner** ⊕ Allentown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1894; aged 70; died, Dec. 12, 1939, at the Sacred Heart Hospital.

**George Florian Pache,** Angels Camp, Calif.; Cooper Medical College, San Francisco, 1889; formerly county health officer; aged 74; died, Nov. 12, 1939, in Stockton.

**Henrietta Damkroeger,** Decoto, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1909; died, Oct. 13, 1939.

**Francesco Sunseri,** Los Angeles; Regia Università degli Studi di Palermo, Facoltà di Medicina e Chirurgia, Italy, 1893; aged 71; died, Nov. 8, 1939, of myocarditis.

**Charles E. Skinner,** Howell, Mich.; Detroit College of Medicine, 1904; member of the Michigan State Medical Society; aged 73; hanged himself, Dec. 6, 1939.

**Oliver C. Sheley,** Independence, Mo.; Kansas City Medical College, 1876; member of the Missouri State Medical Association; aged 84; died, Dec. 2, 1939.

**George Francis Ryan,** Orme, Tenn.; University of Tennessee College of Medicine, Memphis, 1911; aged 59; died, Nov. 21, 1939, in Chattanooga.

**Benjamin Bernard Eichner,** New York; Columbia University College of Physicians and Surgeons, New York, 1919; aged 46; died, Nov. 6, 1939.

**Gustave Aime Dubuc,** Pincher Creek, Alta., Canada; School of Medicine and Surgery, Montreal, Que., 1898; aged 65; died, Nov. 10, 1939.

**Ferdinand Aloysius Grafe,** Cincinnati; Cincinnati College of Medicine and Surgery, 1900; aged 76; died, Dec. 5, 1939, of cerebral hemorrhage.

**Otto P. Steiner,** Chicago; Universität Basel Medizinische Fakultät, Switzerland, 1915; aged 49; died, Oct. 4, 1939, of chronic myocarditis.

**Joseph von Werthern,** San Francisco; Tulane University of Louisiana School of Medicine, New Orleans, 1892; aged 71; died, Oct. 12, 1939.

**William Allan,** Los Angeles; University of Edinburgh Faculty of Medicine, Edinburgh, Scotland, 1880; aged 81; died in December 1939.

**Frederick Kirchhoffer,** San Francisco; University of California Medical Department, San Francisco, 1887; aged 79; died, Oct. 16, 1939.

**Charles Douglas Long,** Los Angeles; University of Michigan Homeopathic Medical School, Ann Arbor, 1884; aged 82; died, Oct. 18, 1939.

**Thomas Vanston Curtin,** Vancouver, B. C., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1901; died, Nov. 9, 1939.

**John Edward Leo Flynn,** Boston; Tufts College Medical School, Boston, 1899; aged 63; died, Nov. 26, 1939, at his home in Quincy, Mass.

**Frederick Morrill,** Boston (licensed in Massachusetts by years of practice); aged 86; died, Oct. 7, 1939, of cerebral hemorrhage.

**Robert Taylor Williams,** Los Angeles; Detroit College of Medicine, 1909; aged 56; died, Nov. 16, 1939, of coronary thrombosis.

**Michael Rozumski** ⊕ Chicago; Bennett Medical College, Chicago, 1912; aged 56; died, Dec. 5, 1939, of carcinoma of the prostate.

**Leonard Edward Schoch,** Los Angeles; Homeopathic Medical College of Missouri, St. Louis, 1890; aged 73; died, Oct. 20, 1939.

**Walter Le Roy Blodgett** ⊕ Calistoga, Calif.; Cooper Medical College, San Francisco, 1895; aged 69; died, Oct. 25, 1939.

**Lester Claude Gregory,** Pittsburg, Calif.; Cooper Medical College, San Francisco, 1895; aged 66; died, Dec. 10, 1939.

**Thomas Alexander McTaggart,** Pawnee, Ill.; Rush Medical College, Chicago, 1885; aged 78; died, Dec. 11, 1939.

**George M. Reeser,** Church Hill, Tenn.; Chattanooga Medical College, 1895; aged 76; died, Nov. 12, 1939.

**Nancy Louisa Andrus,** Santa Monica, Calif.; Toledo Medical College, 1887; aged 89; died, Oct. 17, 1939.

**Milton W. Terry,** Philadelphia, Miss. (licensed in Mississippi in 1906); aged 66; died, Nov. 15, 1939.

**James Selkirk,** Fishtail, Mont.; Albany (N. Y.) Medical College, 1884; aged 80; died, Dec. 3, 1939.

**Edward Albert West,** New York; Rush Medical College, Chicago, 1889; aged 77; died, Nov. 8, 1939.

**Peter Eugene Kerlin,** Cleveland; Cleveland Medical College, 1893; aged 76; died, Nov. 26, 1939.

**Samuel D. McClure,** Newark, Ohio; Cleveland Medical College, 1891; aged 85; died, Dec. 7, 1939.

# Correspondence

## HYPERSENSITIVITY TO SOLUTION OF POSTERIOR PITUITARY

*To the Editor:*—Miss M. C., aged 23, 66 inches (168 cm.) tall and weighing 196¼ pounds (89 Kg.), presented herself Sept. 18, 1939, because of a typical hypopituitary type of obesity which, she stated, dated from an operation performed six years previously for acute appendicitis. The diagnosis had not been confirmed at operation and along with an appendectomy a right salpingo-oophorectomy had been performed. The patient, in spite of an almost starvation diet, had gained 65 pounds (29.5 Kg.) since the operation.

I placed the girl on the regimen suggested by Werner and Weir (Obesity in the Adult, *J. Missouri M. A.* **35**:385 [Oct.] 1938), which in brief consists of desiccated thyroid by mouth and intramuscular injections of solution of posterior pituitary. On the patient's first visit she received 10 units of solution of posterior pituitary. In about five minutes she complained of a sense of constriction in her chest with a generalized itching and a feeling of extreme weakness. This passed over in a few moments and the patient returned home. One week later she received 12 units of solution of posterior pituitary and immediately complained of shortness of breath plus weakness and itching. This again quickly subsided and I suggested that, since she was unduly sensitive to solution of posterior pituitary, she desist from further treatment. Owing to the fact that her loss of weight was very satisfactory, she declined comment.

The patient returned a week later and suggested that we continue the shots. After several minutes of futile altercation with a fat girl determined to reduce, I gave her 5 units of solution of posterior pituitary. She became nauseated, cold and clammy, very gray and cyanotic, with extreme dyspnea. I administered 0.5 cc. of epinephrine 1 : 1,000 and in a few moments the patient was apparently normal again. She returned home and later informed me that the nausea returned, with subsequent vomiting.

I mention this case merely because of previous mention in The Journal of two cases (McMann, Walter: Hypersensitivity to Solution of Posterior Pituitary, Oct. 14, 1939, p. 1488; Rydburg, W. C.: Hypersensitivity to Pituitary, Nov. 25, 1939, p. 1981).

Bert Seligman, M.D., Toledo, Ohio.

## "ARRESTED TUBERCULOSIS"

*To the Editor:*—In the answer to a query on "Arrested Tuberculosis," appearing in The Journal, Nov. 25, 1939, page 1983, there is a statement to which many physicians will take exception. It reads: "A patient who is given artificial pneumothorax treatment and has the area of disease under a good state of collapse usually is much safer from the standpoint of his associates and his own health than the person who has his disease brought under control by the defense mechanism of the body, aided only by a dietetic-hygienic regimen such as is practiced in a sanatorium or a hospital." The implication is that a person with pulmonary tuberculosis has a better outlook if his lung is treated by some form of collapse therapy than if his disease heals spontaneously. It would further imply that all forms of pulmonary tuberculosis should receive collapse treatment. There is no basis for this belief in fact or in theory, and it can safely be said that there is hardly any authority advocating such indiscriminate use of collapse therapy.

Pulmonary tuberculosis heals under the effects of collapse measures in the same way as it does on bed rest: by absorption of exudative deposits, by shrinkage and scarring of caseous foci and cavities and by retraction of the affected lung. Collapsing a tuberculous lung by inducing pneumothorax aids the healing process as a result of the relaxation and diminution in volume of the diseased lung and the reduction of its functions. The collapse per se, however, is not a substitute for natural healing, which must take place regardless of the method of treatment used. A caseous pneumonic process in a person with poor resistance will ulcerate and spread under pneumothorax as readily as if the lung were not collapsed.

In many respects a person with pulmonary tuberculosis whose disease heals spontaneously is more fortunate than one who requires the help of collapse measures. In case of pneumothorax, periodic refills of air are needed for a long time; one authority is cited who advocates five years as a minimum. Some patients, for fear of relapse, take treatment for as long as from ten to twenty years. The hardship that this imposes on the individual from an economic standpoint is illustrated by the physician who poses the question why he could not obtain a position as medical officer in a government agency although he had had an effective pneumothorax for three years. The risk of serious complications in pneumothorax is real and should not be minimized. Furthermore, before the patient has obtained an effective pneumothorax he may have had to undergo additional surgical measures which carry certain risks. The danger of empyema and operative accidents, although slight after the first few months of treatment, is nevertheless always present. By far the majority of all tuberculous empyemas are the direct result of pneumothorax treatment. Prolonged collapse causes fibrosis and pleural thickening, which may prevent complete reexpansion of the lung and cause impairment of the respiratory reserve. To cap it all, one never knows when inflations of air can be stopped, since the lung is collapsed and there is no way of telling whether or not complete healing has taken place. As a result, pneumothorax treatment is often prolonged unnecessarily. On the other hand, when healing takes place without collapse measures the progress of the disease can be followed under direct x-ray visualization and the end result is more easily ascertainable. The disease can be classified as arrested or apparently cured and not, as the editor suggests, "arrested (collapsed)."

It is not our intention to minimize the importance of pneumothorax and other collapse measures in the treatment of pulmonary tuberculosis. They have their indications and contraindications. An important contraindication is a disease process which is amenable to spontaneous healing on bed rest and a hygienic-dietetic regimen. It is almost of equal importance to know when not to give pneumothorax as to know when to give it.

Max Pinner, M.D.
Eli H. Rubin, M.D.
New York.

## "SLOW FETAL HEART RATE"

*To the Editor:*—I was much interested in reading the query in The Journal December 2 with regard to slow fetal heart rate.

An identical case passed through the indoor delivery service in the Boston Lying-in Hospital, either late in 1912 or early in 1913, during my residency there. There was nothing remarkable about the case except that the mother could not be sure from day to day as to fetal movement and that if the fetal heart was heard at all it was so nearly synchronous with the patient's pulse that the two could not be separated with any degree of certainty. The case terminated with spontaneous uneventful labor and resulting in a full term, well developed and apparently normal baby. The pulse rate of the baby did not increase after birth up to the time of discharge two weeks later. I have no information as to the subsequent history of this case.

J. D. Dowling, M.D., Birmingham, Ala.
Health Officer.

# Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

## RAPID TREATMENT OF SYPHILIS

*To the Editor:*—The Houston Post, Nov. 18, 1939, published an article entitled "Four Day Cure for Syphilis," by Howard W. Blakeslee, New York, science editor of the Associated Press. One method is used by Dr. Herman Goodman and the other by Drs. Harold Thomas Hyman, Louis Chargin, John L. Rice and William Leifer, of Mount Sinai Hospital, New York. These methods are not sufficiently outlined to enable a physician to follow them. Therefore I am asking you to furnish the necessary data.

M.D., Texas.

*To the Editor:*—I am seeking advice with regard to a patient under my care who is taking weekly injections for syphilis. She saw an article in a newspaper on the four day treatment of syphilis. Now she is pleading with me to give her this new treatment. Up to the present time this patient has had nine weekly injections of neoarsphenamine, followed in turn by nine biweekly injections of bismuth subsalicylate and by alternating weekly injections of neoarsphenamine and tryparsamide. Both her blood and her spinal fluid Wassermann reactions are positive. She has had no reaction whatever from her treatment and therefore questions my unwillingness to try either of these four day methods. Please advise me.

M.D., Arkansas.

*To the Editor:*—Please give me what information you may have on the four day cures of syphilis according to Dr. Herman Goodman, New York, and the drip method.

Wesley Jones, M.D., Omaha.

*To the Editor:*—Please inform me regarding the four day treatment for syphilis.

Roy E. Smucker, M.D., Salem, Ohio.

Because of the extensive interest in this subject, these questions were referred to two recognized authorities, whose separate replies follow.—EDITOR.

ANSWER.—There has been and still is need for a method of treating syphilis in a short period which will simplify the technical procedure and which will decrease the cost of treatment. Such a system of treatment must produce a high percentage of cure and should not produce a higher incidence of complications if it is to be superior to the present methods.

In this country the so-called intensive therapy program was suggested by Pollitzer in 1916. The plan in the main consisted of giving four doses of arsphenamine on four successive days, waiting a week and then again giving another four doses in four days. The Pollitzer program did not become popular primarily because the incidence of cure was low, as the percentage of relapses was high. The method did not adequately control the infectious lesions and was likewise inefficient in the treatment of the late manifestations of the disease.

The newer "four day plans" are improvements in one way or another on the Pollitzer system; however, the general principle of giving a large amount of arsphenamine in a few days is an effort to employ the concept of sterilisatio magna. The method suggested by Goodman is essentially that of Pollitzer with the addition of sodium thiosulfate and sodium iodide. The literature does not contain sufficient information about the Goodman suggestion to warrant judgment at this time.

The intravenous drip method of treatment was first reported by Chargin, Leifer and Hyman (The Application of the Intravenous Drip Method of Chemotherapy as Illustrated by Massive Doses of Arsphenamine in the Treatment of Early Syphilis, THE JOURNAL, March 16, 1935, p. 878). A second report by Hyman, Chargin and Leifer, entitled "Massive Dose Arsenotherapy of Syphilis by the Intravenous Drip Method (Five Year Observation)" appeared in the *American Journal of the Medical Sciences* (**197**:480 [April] 1939). The third report, by Hyman, Chargin, Rice and Leifer, appeared in THE JOURNAL (Sept. 23, 1939, p. 1208) under the title "Massive Dose Chemotherapy of Early Syphilis by the Intravenous Drip Method." A summarizing report appeared in the *American Journal of Syphilis, Gonorrhea and Venereal Disease* (**23**:685 [Nov.] 1939).

A summary of the published reports brings out the following points: Two groups of patients have been treated; the first consisted of twenty-five patients and has been observed for five years, while the second group, comprising eighty-six patients, has been under observation for one year.

*Clinical Results.*—The clinical results were equal to those obtained from systems requiring many months of treatment. The spirochetes disappeared from the lesions within twenty-four hours. Serologic reversals occurred in approximately 90 per cent of the cases. In the group of 111 cases there were five in which the treatment was a failure.

*Complications of Treatment.*—The complications of the drip method of treatment were numerous and serious. Dermatitis appeared in 32 per cent of the first group and in 52 per cent of the second series. Polyneuritis was noted in 32 per cent and 38 per cent respectively. Two patients contracted hemorrhagic encephalitis, of whom one died and one had a hemorrhagic complication. No significant renal or hepatic damage was observed.

The febrile reactions, the cutaneous reactions, the polyneuritis and the one death in the 111 cases offer such a high incidence of serious complications that the method should not be adopted by any one who is not entirely conversant with the complications of the treatment of syphilis. The authors repeatedly emphasize the fact that the "method of treatment must still be considered in an experimental phase and should not be employed for routine clinical use until greater safeguards have been established."

The originators of this plan are now using mapharsen by the drip method, having started with a small dose program, and are apparently encountering fewer complications than they did from neoarsphenamine. The report on the value of mapharsen by this procedure will probably be made if and when the results warrant it.

The originators of the drip method are to be encouraged in their efforts to find a method of treatment which will be simple in its technical requirements and which can be given in a short period of time; however, the present plan of treatment is still producing too high an incidence of serious complications to be employed as a routine procedure.

Perhaps the well controlled experiments that the Mount Sinai group is undertaking will eventually produce a safe and rapid method of curing early syphilis, but until that system is announced the evaluation of the plan should be confined to institutions or groups capable of properly studying such a procedure and not undertaken by individuals who treat syphilis only occasionally.

With regard to the patient who precipitated the inquiry concerning this method of treatment, she should be forcefully discouraged from endeavoring to undergo such a course of treatment at present, as the method is applicable only in the treatment of early syphilis. She has not had a sufficient amount of chemotherapy as yet to know what the effect of intensive arsphenamine and bismuth medication will accomplish for her. When she has had a total of thirty injections of neoarsphenamine and approximately twice as much of a bismuth compound, the spinal fluid should be reexamined; if it still gives a strongly positive reaction and especially if it shows some paretic features the patient should then be given a course of fever therapy.

ANSWER.—In the thirty years since the introduction of arsphenamine there have been numerous efforts to devise a system of treatment which would approximate Ehrlich's dream of the *therapia sterilisatio magna.* Ehrlich and Hata had every right to believe from their experimental work that one dose of arsphenamine would cure human syphilis, but unfortunately clinical experience soon showed that this was not the case. During the ensuing ten years many methods for the use of arsphenamine were devised, most of which were not subjected to sufficient clinical trial to allow an evaluation of their efficacy. Most observers early became impressed, however, with the obvious fact that there was no short cut to the cure of syphilis with arsphenamine and so there developed the present concept of the necessity for long term treatment. Studies of arsenic excretion indicated that from five to seven days was required for the complete excretion of an injected dose of arsphenamine and therefore it was quite natural to select weekly injections as the optimum. From this was developed, by a series of painstaking clinical trials, the present prolonged continuous, alternating treatment for early syphilis.

In the meantime, however, at least one "quick treatment" method gained sufficient currency to be given wide clinical trial and eventually to be subjected to critical analysis of the results to be obtained from its use. This method, described by Pollitzer (The Principles of the Treatment of Syphilis, *J. Cutan. Dis.* **24**:633 [Sept.] 1916) consisted in the administration by the usual technic of 0.6 Gm. of arsphenamine every day for three or four days. Clinical use showed that this treatment was not well tolerated by the patient, and the studies of the Cooperative Clinical Group (Stokes, J. H., and others: Cooperative Clinical Studies in the Treatment of Syphilis, *Ven. Dis. Inform.* **13**:207 [June], 253 [July] 1932) made it clear that the results to be

obtained from this method of treatment were unsatisfactory. Only 23 per cent of patients treated by this method and observed for more than two years in the clinics of the Cooperative Clinical Group were found to have experienced a satisfactory result, whereas 79 per cent of the patients treated by a standard system were so fortunate.

Little else was done to develop a "quick treatment" for syphilis until 1935, when Hyman and his collaborators (Chargin, Louis; Leifer, William, and Hyman, H. T.: The Application of the Intravenous Drip Method to Chemotherapy as Illustrated by Massive Doses of Arsphenamine in the Treatment of Early Syphilis, THE JOURNAL, March 16, 1935, p. 878) published a report of the treatment of twenty-five patients with early syphilis by a continuous intravenous drip method. "Under special nursing supervision, 5 per cent dextrose solution was allowed to flow slowly into a superficial vein of the forearm at the rate of approximately 100 cc. per hour (thirty drops per minute) for a continuous period of ten to fifteen hours daily on each of four or five successive days. At the end of each hour, 0.1 Gm. of neoarsphenamine dissolved in 50 cc. of 5 per cent dextrose was added, so that the patients received 1 Gm. each day. By means of this method it was found possible to administer 4 to 5 Gm. of neoarsphenamine within four or five days" (Hyman, H. T.; Chargin, Louis, and Leifer, William: Massive Dose Arsenotherapy of Syphilis by the Intravenous Drip Method, *Am. J. Syph., Gonor. & Ven. Dis.* **23**:685 [Nov.] 1939).

Fifteen of the original twenty-five patients have now been followed for more than five years and an additional seventy-eight patients have been treated by this method and followed for one year or more. From this experience the authors estimate the maximum percentage of failure to be 14, i. e. at least 86 per cent were "seronegative and well." However, "One patient . . . suddenly developed a convulsion and died two days following an otherwise uneventful completion of treatment . . . [and] . . . polyneuritis of moderate severity occurred in 10 per cent and was slight in another 25 per cent" [of all the patients treated].

The method is still in the experimental stage and is not ready for general application. It may prove to be of major importance but at the moment the factors of dosage and the proper duration of treatment are unsettled, and it is not even certain that the most suitable drug or type of drug has been found. At present Hyman and his collaborators are utilizing mapharsen to a total dose of 1 Gm. in five days.

Abroad, Tzanck, Duperrat and Lewi (Le traitement novarsenical massif par instillation intraveineuse goutte à goutte, *Bull. et mém. Soc. méd. d. hôp. de Paris* **54**:268 [Feb. 21] 1938) have also used a similar method of treatment, but their published reports do not reflect the care in observation and follow-up displayed by Hyman and his group. They report essentially the same results, however; i. e. a majority of patients so treated were rendered seronegative and apparently well for a short period of observation, but there was a high incidence of peripheral neuritis and deaths apparently as the direct result of treatment.

Search fails to reveal a published description of the method of treatment which the enquirer's newspaper clipping says was "reviewed this fall in the *Medical Record*" and which by implication was ascribed to Dr. Herman Goodman. There is no reason to believe that treatment with an arsphenamine, sodium iodide and sodium thiosulfate on the same day would increase the therapeutic efficiency of any of those drugs. Indeed, there is some indication that the immediately subsequent injection of sodium thiosulfate may "denature" an arsphenamine and render it therapeutically impotent.

## COLOR BLINDNESS

***To the Editor:***—**I have read in a textbook of ophthalmology that in cases of congenital color amblyopia "the color sense can be developed, if training is begun at a sufficiently early period of life." Could you tell me where I could find directions for this training?** **M.D., Puerto Rico.**

ANSWER.—It is probable that the question pertains to color blindness rather than to a central scotoma for colors. Color blindness is congenital (except for a few rare cases) and is usually an inherited trait. According to Duke-Elder (Textbook of Ophthalmology **1**:974) "A person in whom color vision is defective may go through life quite unconscious of his inferiority and without making any incriminating mistakes, differentiating objects by their size, shape and luminosity, using all the time a complete color vocabulary based on his experience, which teaches him that color terms are applied with great consistency to certain objects and to certain achromatic shades, until circumstances are arranged to eliminate these accessory aids, and he realizes that his sensations differ in some way from the normal." There is no known method of developing a congenitally deficient color sense, but in alert individuals there develops a correlation of shape, size and intensity of the achromatic gray hue (which replaces color sensation in the color blind) to an extent that color is guessed but not actually perceived.

## INJURY TO NERVES AT ELBOW

***To the Editor:***—**Two years ago a man was struck in the back of the median epicondyle of the right arm. His arm was paralyzed in flexion for about two hours after the accident. After the first two hours he could extend and flex his forearm but could not extend the fourth and fifth fingers of the right hand. Before the accident the two forearms and hands were apparently the same and normal. Today measurements of the forearms are as follows:**

| | Measurements in Inches | |
|---|---|---|
| | Right | Left |
| Below styloid process at wrist | 6⅜ | 6½ |
| Wrist above styloid process | 6½ | 6 9/16 |
| Forearm at junction of lower and middle thirds | 7 | 7 |
| Forearm at middle | 9 | 9⅛ |
| Forearm at junction of middle and upper thirds | 9½ | 10 |
| Forearm in upper third | 10 | 10¼ |
| Forearm above upper third | 10¼ | 10⅜ |

**The man has always been right handed. There is atrophy of the muscles on the ulnar border of the palm of the right hand. There is atrophy of the muscles in the back of the hand (dorsal interossei?). The bones are prominent in the back of the hand. Even the muscles posteriorly between the first and second metacarpal bones are atrophied. The fourth and fifth fingers are in extreme flexion. The fingers cannot be straightened. There is dorsiflexion in the metacarpophalangeal joints but not in the interphalangeal joints. The joints themselves are normal. The second and third fingers cannot be straightened completely because of the inability to extend the fourth and fifth fingers. The ulnar nerve is very tender in the region posterior to the median epicondyle (right)—the site of the injury. The pain radiates down to the palm of the hand when the nerve is touched. Grey's Anatomy does not show that the ulnar nerve innervates any of the atrophied muscle. Please explain how the present condition resulted from an injury to the right ulnar nerve posterior to the median epicondyle. Please suggest a treatment.**

**M.D., Pennsylvania.**

ANSWER.—It is evident that all three nerves at the elbow have been injured. The median appears to have recovered promptly. The ulnar appears to have been severed, and if too much time has not elapsed the ends should be exposed and reunited. The flexion of the fourth and fifth fingers indicates a radial nerve injury. This nerve should also be exposed if the ulnar nerve is operated on. Doubtless there has been a more massive injury than was originally supposed, or the radial nerve may have been injured by the impact.

## BODY ODOR, OR BROMIDROSIS

***To the Editor:***—**A woman aged 33 complains of an odor which seems to emanate from the perineal region. She says that this difficulty started at the age of 17 and has been getting worse and is like the smell of a skunk or burning rubber. The odor is somewhat worse premenstrually, but she has noted no change during her six normal pregnancies. Apparently the odor is not continuously present, as I have seen her on several occasions and could note nothing more than the usual odor. She states that she avoids crowds because people move away from her. Even the children notice it and remark about it. On examining her I found mild vaginitis and a small erosion. She states that there was no change in the odor after these were cleared up. Urinalysis also has given negative results with the usual tests. Any suggestions would be appreciated, as the woman tends to draw away from people and prefers to be alone in order to avoid embarrassment.** **M.D., Minnesota.**

ANSWER.—The condition of which the patient complains is probably bromidrosis. The abnormally offensive body odor is due to an increased activity of apocrine glands. This increased activity becomes more manifest as a result of emotional excitement, nervousness or sexual activity. It may involve a localized area of the body such as the perineal region. Little can be done to eradicate the offensive odor completely, but patient application of certain principles will control the condition. A deodorant in the form of a daily sitz bath consisting of 1 grain (0.06 Gm.) of potassium permanganate in a pint (475 cc.) of water can be used. It is likewise well to prescribe a dusting powder consisting of equal parts of boric acid, tannic acid and purified talc. This should be used liberally in order to absorb the cutaneous secretions. The patient should likewise receive moderate doses of one of the barbiturates such as phenobarbital in order to overcome her nervous and emotional imbalance. Persons with bromidrosis develop fixations concerning their condition which make treatment more difficult to carry out. The unusual disease is most marked during the period of active sexual life and is inclined to improve as the person grows older, probably as a result of the decreased activity of the apocrine glands. All vaginal discharges should be eradicated, for they may contribute to the offensive odor.

## IODIDES AND INTRAVENOUS UROGRAPHY

*To the Editor:*—What substances, if any, can be used for intravenous urography for persons with pulmonary tuberculosis and definite or suspected renal tuberculosis? After purchasing neo-iopax, I find in the enclosed literature the following statement: "Neo-Iopax should not be administered to patients with severe liver disorders, nephritis, tuberculosis or hyperthyroidism, and great care should be exercised in using it in cases of acute or chronic uremia. Caution should also be exercised when a severe systemic disease is present as well as a disorder of the urinary tract." I had assumed the iodine in neo-iopax to be stable, entirely excreted, and not absorbed into the tissues. From the quotation it would appear to be an erroneous assumption. I would appreciate your opinion as to what harm the use of neo-iopax would do and the method by which it is brought about, if any way other than the well known deleterious effect of iodine on tuberculous lesions in the lungs. M.D., New York.

ANSWER.—The manufacturers of iodine solutions employed for urographic purposes have advised against their use in the presence of the various lesions enumerated in the "caution" statement in conformance to the New and Nonofficial Remedies restriction imposed by the Council on Pharmacy and Chemistry. Experience gained in a large clinic, however, after observation of some 25,000 patients who received various organic iodine solutions commonly employed for excretory urography, failed to reveal untoward reactions in patients suffering from any of the lesions enumerated. The group included cases of tuberculosis in almost every form, exophthalmic goiter and renal insufficiency. Although temporary local or systemic reactions occur, so-called iodine reactions have not been observed. The iodine in these mediums is stable and is usually excreted without much absorption. It is questionable whether the temporary presence of such iodine which might be absorbed from the blood could have a deleterious effect on the tissues, even in the presence of an active lesion such as tuberculosis.

## TOXICITY OF CHLORATES

*To the Editor:*—Information is requested as to whether or not a chemical, sodium chlorate, used in killing weeds, as on WPA weed projects, is toxic to careless users. If so, I should like to know what toxic manifestations might be expected and, further, whether dermatomyositis or exfoliative dermatitis may be produced. M.D., Idaho.

ANSWER.—The use of sodium chlorate is similar to that of potassium chlorate but is less intense. As little as 0.4 Gm. (6 grains) by mouth has produced death. Damaged skin is readily irritated by high concentrations of chlorate solutions. On the unbroken skin, chlorates act as oxidizers and desiccators. Absorption through mucous membranes occurs, so that the inhalation of dust containing chlorates is undesirable. Continued or repeated contacts with the dust of chlorates as used in industry may provoke a dermatitis. The encyclopedia Occupation and Health, of the International Labor Office, states that "cases of irritation, erythema of the skin, and even sores situated on the fingers, accompanied by edema of the face, are fairly common. Oppenheim reports twenty-six cases of dermatitis from chlorates made electrolytically." When appreciable quantities of chlorates are absorbed, vomiting, gastro-enteritis, diarrhea, methemoglobinuria, hepatitis, nephritis, anemia, cyanosis and other significant manifestations may occur.

## KIDNEY STONE AND HYPERTENSION

*To the Editor:*—A prospective patient has a systolic blood pressure of 198. Examination of the urine indicates specific gravity 1.014, albumin, pus, no casts. A urologist finds, "a calcium oxalate stone as big as a quarter in the upper part of the right kidney." Red cell counts and hemoglobin are normal. The heart is normal. The urologist attributes the arterial tension to the pus and albumin. Is this probable? He does not wish to operate for the stone while the pressure is so high. The family physician states that in a report made before the closing session of the A. M. A. at Cleveland, June 15, 1934, it was announced that a new diet had been discovered that was a huge success in dissolving kidney stones. Is this correct and, if so, has anything come of it? Should the kidney be removed or should the stone be removed? What factors would influence a choice between the two procedures? M.D., Georgia.

ANSWER.—Judging from available data, the presence of an uncomplicated stone in the kidney has little if any effect on blood pressure. Whether widespread infection in the kidney secondary to renal stone might be a factor in causing hypertension has not been definitely determined. It is possible in exceptional cases that a widespread infection might be the cause of some form of renal ischemia with resulting hypertension. The chances are, however, that the elevated blood pressure found in this patient has nothing to do with the stone. Hypertension without any other complications present is not regarded as a contraindication to renal surgery.

The operative indications for the patient would seem to be either a pelviolithotomy or nephrolithotomy, according to the situation of the stone and the conditions found on renal exploration. Nephrectomy would probably not be necessary unless there was evidence of widespread infection and destruction of the renal parenchyma.

The diet referred to is probably a high acid ash diet, with the addition of vitamin A. This method of treatment has been reported to be of value in the dissolution of recently formed soft stones. It seldom, if ever, however, will dissolve well formed renal stones which have been present for any length of time. It probably would be of no value in this case.

The nature of the stone would be an important factor in the after treatment. This can be determined best by chemical analysis of the stone and not by roentgenographic data. To prevent recurrence of stone certain types of diet are indicated, depending on the chemical ingredients of the stone, the hydrogen ion concentration of the urine, and the bacteriologic investigation.

## POLYCYTHEMIA VERA AND THYROIDECTOMY

*To the Editor:*—My associate and I have run across a rare disease—polycythemia vera. The patient's red blood cell count increased to 6,600,000 and continues to increase unless controlled with phenylhydrazine. The patient has severe symptoms of headache, irritability, visual hallucinations, dizziness and severe prostration when the count increases. Recently a colleague of Chicago has written that thyroidectomy gives permanent or semipermanent relief in this disease. Is this a confirmed fact? Louis A. Ling, M.D., Deer Park, Wash.

ANSWER.—The report referred to is probably that of Limarzi, Keeton and Seed, of Chicago, on the early effect of total thyroidectomy in a case of polycythemia vera (*Proc. Soc. Exper. Biol. & Med.* **36**:353 [April] 1937). Fifteen months after thyroidectomy the patient was relieved of her former symptoms but presented the symptoms of myxedema. There was a partial return of the blood picture toward normal. There have been no subsequent reports to corroborate this result.

From a theoretical point of view there may be some rationale for total thyroidectomy in this disease. It is well known that hypothyroidism and myxedema are often associated with anemia, and that exophthalmic goiter is occasionally associated with polycythemia. Conversely, thyroid atrophy has been found in patients suffering from pernicious anemia. Furthermore it has been reported that thyroidectomy in rabbits may result in anemia and that injection of thyroxine in rats may produce hyperplasia of the bone marrow. The literature was cited by R. H. Jaffé (Chronic Thyroiditis, THE JOURNAL, Jan. 9, 1937, p. 105).

Despite these clinical and experimental observations, the treatment of this disease should still rest on the use of phenylhydrazine and repeated phlebotomies until the possible value of thyroidectomy is confirmed by further studies. One must remember that the symptoms of the induced myxedema may be as severe as those associated with polycythemia vera.

## BLOOD CHOLESTEROL AND BASAL METABOLISM IN HYPOTHYROIDISM

*To the Editor:*—Recently I performed basal metabolism and blood cholesterol tests on a patient. The basal metabolism was —18 and the blood cholesterol was 92 mg. per hundred cubic centimeters of blood. The patient's symptoms are more those of hypothyroidism, and with the basal metabolism definitely decreased and the blood cholesterol characteristic of hyperthyroidism the diagnosis is confusing. Which of the two tests mentioned is the more reliable aid in diagnosis? M.D., Texas.

ANSWER.—The basal metabolism is a more reliable guide to the degree of hypothyroidism than the cholesterol content of the blood. If the patient appears to have hypothyroidism, treatment should be started regardless of the blood cholesterol level. It should, of course, be borne in mind that hypothyroidism may be either primary or secondary. The secondary type is most commonly associated with lack of adequate pituitary stimulation and in this instance the clinical picture may be somewhat atypical.

## MIGRAINE HEADACHES AND NICOTINIC ACID

*To the Editor:*—I have recently used nicotinic acid in a single oral dose of 100 mg. for a patient who is subject to migraine headaches preceded by a blinding aura. This dose aborted the attacks with success and with no ill after-effects. Formerly she had been taking aminopyrine tablets, which prevented the headache but left her with a drugged feeling for a day or more. The frequency of the seizures was not affected, but the patient's mental attitude is much improved because she no longer fears the attacks. She was instructed to take the medication at the onset of the aura. May I ask whether this use of nicotinic acid has been previously reported? Alan N. Rogers, M.D., Norristown, Pa.

ANSWER.—Some of those who have worked with nicotinic acid have found that it does relieve some patients with migraine but does not seem to be specific, and nothing on this subject appears to have been published as yet. There is a type of headache accompanying pellagra which often precedes any diagnostic lesion and which is at times somewhat migrainous in type.

# Medical Examinations and Licensure

## COMING EXAMINATIONS

### STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, January 20, page 276.

### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II, Feb. 12-14; Part III, June or July, to be given in medical centers having five or more candidates desiring to take the examination. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

### SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Written.* Part I. Various places throughout the United States and Canada, March 28. *Oral.* Part II. New York, June 10-11. Applications must be received 60 days prior to examination. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: November 1940. *If a sufficient number of applications are received before March 1 there will be an examination at New York, June 10-14.* Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General oral and pathologic examinations (Part II) for all candidates (Groups A and B)* will be conducted in Atlantic City, N. J., June 8-11. *Applications for admission to Group A, Part II, examinations must be on file not later than March 15.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Oral. New York, June 8-10; Cleveland, Oct. 5. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 3-5. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: New York, June 10-11. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Kansas City, Mo., May 18, following the Region III meeting of the American Academy of Pediatrics. Seattle, June 2. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Cincinnati, May 17-18. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: New York, June 7-10. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-11. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

## Illinois October Examination

Mr. Lucien A. File, Acting Superintendent of Registration, reports the written examination (graduates of foreign schools given also a practical test) held at Chicago, Oct. 17-19, 1939. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and two candidates were examined, ninety-nine of whom passed and three failed. Thirty physicians were licensed by reciprocity and nine physicians were licensed by endorsement. The following schools were represented:

| School | PASSED | Year Grad. | Per Cent |
|---|---|---|---|
| Stanford University School of Medicine | | (1939) | 85 |
| George Washington University School of Medicine | | (1938) | 81 |
| Chicago Medical School | 79, 81, 81, 82, 84,* 84, 84, 84, 85, 85, 86, 87, 87 | (1932) 76, (1939) | 79,* |
| Loyola University School of Medicine | | (1939) 81, 85, 86, | 87 |
| Northwestern University Medical School | 81, 82, 83,* 83, 86, 86, 88* | (1937) 86, (1939) | 79 |
| Rush Medical College | 84, 85, 85,* 86, 87, 90* | (1931) 91, (1938) 82, | 83, |
| The School of Medicine of the Division of Biological Sciences | | (1937) 86, (1938) 83, 85, 86, | 86 |
| University of Illinois College of Medicine | 83,* 83,* 83, 83, 83, 84, 84, 84, 85, 85, 86, 86, 86, 86, 87 | (1931) 81,* (1939) | 82, |
| Louisiana State University School of Medicine | | (1939) | 84 |
| Harvard Medical School | | (1938) | 83* |
| Tufts College Medical School | | (1932) | 82 |
| University of Michigan Medical School | | (1938) | 86* |
| Wayne University College of Medicine | | (1939) | 78 |
| Creighton University School of Medicine | | (1934) 85, (1938) | 80 |
| University of Rochester School of Medicine | | (1937) | 86 |
| Jefferson Medical College of Philadelphia | | (1900) | 75 |
| Queens University Faculty of Medicine | | (1922) | 80 |
| University of Toronto Faculty of Medicine | | (1937) | 88 |
| Medizinische Fakultät der Universität, Wien | (1926) 81, (1934) 80, (1935) 81, (1937) 78,* 82, 82, 84, (1938) 78 | (1923) | 82, |
| Université de Paris Faculté de Médicine | | (1937) | 80 |
| Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg | | (1922) 78, (1932) | 84 |
| Christian-Albrechts-Universität Medizinische Fakultät, Kiel | | (1935) | 76 |
| Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin | | (1912) 77, (1931) 81, (1936) 77, (1937) | 82 |
| Julius-Maximilians Universität Medizinische Fakultät, Würzburg | | (1917) | 80 |
| Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main | | (1923) | 80 |
| Medizinische Akademie Düsseldorf | | (1921) | 76 |
| Schlesische-Friedrich-Wilhelms-Universität, Breslau | | (1935) | 77 |
| Universität Köln Medizinische Fakultät | | (1935) | 80 |
| Universität Leipzig Medizinische Fakultät | | (1936) | 82 |
| Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest | | (1917) | 79 |
| Regia Università degli Studi de Bologna. Facoltà di Medicina e Chirurgia | | (1937) | 77 |
| Universität Bern Medizinische Fakultät | (1937) 78, (1938) 75 | (1935) | 77, |

| School | FAILED | Year Grad. | Number Failed |
|---|---|---|---|
| Medizinische Fakultät der Universität, Wien | | (1925), (1936) | 2 |
| Hamburgische Universität Medizinische Fakultät, Hamburg | | (1921) | 1 |

| School | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Northwestern University Medical School | | (1938) | Michigan |
| University of Illinois College of Medicine | | (1938) | Wisconsin |
| Indiana University School of Medicine | | (1936) | Indiana |
| State University of Iowa College of Medicine | (1936, 2)* Iowa | (1930), (1932), | |
| University of Maryland School of Medicine and College of Physicians and Surgeons | | (1934) | Maryland |
| University of Michigan Medical School | (1934), (1935), (1936)* Michigan | (1920), (1931),* | |
| Wayne University College of Medicine | | (1937) | Michigan |
| University of Minnesota Medical School | | (1934)* | Minnesota |
| St. Louis University School of Medicine | (1938),* (1938, 2) Missouri | (1928), (1935), | |
| Washington University School of Medicine | (1937) Missouri | (1936),* | |
| University of Nebraska College of Medicine | | (1937), (1938) | Nebraska |
| University of Oregon Medical School | | (1937) | Louisiana |
| University of Pennsylvania School of Medicine | | (1930) | Penna. |
| Meharry Medical College | | (1937) | Tennessee |
| Vanderbilt University School of Medicine | | (1915) | Tennessee |
| University of Texas School of Medicine | | (1937)* | Texas |
| Medical College of Virginia | | (1931) | Virginia |

| School | LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|---|---|---|
| Loyola University School of Medicine | | (1939) | N. B. M. Ex. |
| Northwestern University Medical School | (1938) N. B. M. Ex. | (1928) | U.S.P.H.S., |
| Rush Medical College | | (1938)* | N.B. M.Ex. |
| The School of Medicine of the Division of Biological Sciences | | (1938) | N. B. M. Ex. |
| University of Illinois College of Medicine | | (1939)* | N.B.M.Ex. |
| Johns Hopkins University School of Medicine | | (1932)* | N.B.M.Ex. |
| Washington University School of Medicine | | (1930) | N. B. M. Ex. |
| University of Rochester School of Medicine | | (1938) | N. B. M. Ex. |

* Licenses have not been issued.

## New Hampshire September Report

Dr. T. P. Burroughs, secretary, New Hampshire State Board of Registration in Medicine, reports the written examination held at Concord, Sept. 14-15, 1939. The examination covered eight subjects and included eighty questions. An average of 75 per cent was required to pass. Ten candidates were examined, nine of whom passed and one failed. Sixteen physicians were licensed by reciprocity and twelve physicians were licensed by endorsement. The following schools were represented:

| School | PASSED | Year Grad. | Per Cent |
|---|---|---|---|
| Loyola University School of Medicine | | (1939) | 79.8 |
| Rush Medical College | | (1937) 82.1, (1938) | 91.5 |
| Boston University School of Medicine | | (1939, 2)* | |
| McGill University Faculty of Medicine | | (1935) 90, (1937, 2)* | |
| Université de Paris Faculté de Médecine | | (1928) | 82.9 |

| School | FAILED | Number Failed |
|---|---|---|
| Osteopath † | | 1 |

| School | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Georgetown University School of Medicine | | (1938) | New Jersey |
| State University of Iowa College of Medicine | | (1923) | Iowa |
| Boston University School of Medicine | | (1937) | Mass. |
| Harvard Medical School | (1930) Maine | (1918), (1934) | Mass., |
| Cornell University Medical College | | (1937) | New York |
| New York University College of Medicine | | (1932) | New York |
| Syracuse University College of Medicine | | (1937) | New York |
| Hahnemann Medical College and Hospital of Philadelphia | | (1910) | Mass. |
| University of Pennsylvania School of Medicine | (1937) Pennsylvania | (1920), | |
| University of Vermont College of Medicine | | (1923), (1938) | Vermont |
| Medical College of Virginia | | (1932) | Virginia |
| University of Montreal Faculty of Medicine | | (1920) | Maine |

| School | LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|---|---|---|
| Yale University School of Medicine | | (1935) | N. B. M. Ex. |
| Johns Hopkins University School of Medicine | | (1934) | N. B. M. Ex. |
| Boston University School of Medicine | | (1937), (1938) | N. B. M. Ex. |
| Harvard Medical School | | (1929), (1937, 2) | N. B. M. Ex. |
| Tufts College Medical School | | (1937, 2), (1938) | N. B. M. Ex. |
| National University of Athens School of Medicine | | (1935) | Greece |
| University of Edinburgh Faculty of Medicine | | (1937) | N. B. M. Ex. |

* Licenses have not been issued.
† Examined in medicine and surgery.

# Book Notices

**Accepted Foods and Their Nutritional Significance.** Containing Descriptions of the Products Which Stand Accepted by the Council on Foods of the American Medical Association on September 1, 1939. Cloth. Price, $2. Pp. 492. Chicago: American Medical Association, 1939.

This book is the official publication of the American Medical Association's Council on Foods. It contains descriptions and detailed information regarding the chemical composition of more than 3,800 accepted food products, together with a discussion of their nutritional significance. The book provides also the Council's opinion on many topics in nutrition, dietetics and the proper advertising of foods. The accepted products are classified in various categories: fats and oils; fruit juices including tomato juice; canned and dried fruit products; grain products; preparations used in the feeding of infants; meats, fish and sea foods; milk and milk products other than butter; foods for special dietetic purposes; sugars and syrups; vegetables and mushrooms, and unclassified and miscellaneous foods, including gelatin, iodized salt, coffee, tea, chocolate, cocoa, chocolate flavored beverage bases, flavoring extracts, dessert products, baking powder, cream of tartar, baking soda and cottonseed flour. There is a suitable subject index as well as an index of all the manufacturers and distributors of food products that stand accepted by the Council on Foods. This book should be helpful to every physician interested in foods and nutrition.

**Traité d'ophtalmologie.** Publié sous les auspices de la Société française d'ophtalmologie. Par MM. P. Bailliart, Ch. Coutela, E. Redslob, E. Velter. René Onfray: Secrétaire général. Tome V: Pathologie (suite). Par M. Amsler et al. Cloth. Price, 400 francs. Pp. 851, with illustrations. Paris: Masson & Cie, 1939.

Volue v of this new French encyclopedia follows the general make-up and format of its predecessors and, as is characteristic of any work of mixed authorial parentage, is somewhat spotty. The subject of diseases of the iris and ciliary body, including tumors, by Teulières and Beauvieux, of Bordeaux, forms the first chapter and leaves something to be desired, especially from the standpoint of etiology. It is too complete for the general man and not in enough detail for the advanced ophthalmologist. The illustrations are good but there are not enough of them. The subsequent chapter on diseases of the choroid by the same authors is somewhat better but is still inadequate. For example, angioid streaks in the retina rates only one small paragraph of ten lines. Ocular tuberculosis forms a separate chapter and is fairly well done, although the bibliography is incomplete. The work by Friedenwald and by Wood is not even mentioned. But then comes diseases of the retina, 228 pages by Bailliart of Paris, a brilliant, clearly written but still concise account. It is an excellent piece of work and is comparable to Leber's chapter on the retina in Graefe-Saemisch, although more condensed. Both color as well as black and white illustrations are freely used and completely captioned. An extensive bibliography concludes the chapter. Recurrent retinal hemorrhages is the next chapter, by Jeandelize and Drouet, of Nancy. It is well done and describes unusual types of disease that are commonly passed over in textbooks. As brilliant as Bailliart's chapter on the retina is that on retinal detachment by Amsler, of Lausanne, and Mme. Schiff-Wertheimer, of Paris. These former pupils of Gonin have covered this fairly modern aspect of ophthalmology from all aspects except the surgical attack. The chapter is only 146 pages long but is thorough and well illustrated. It should be read by all modern ophthalmologists; it forms an excellent reference chapter, with the 246 articles listed in the bibliography. Tumors of the retina, by Mawas, of Paris, is brief but comprehensive. The chapter on diseases of the optic nerve head is somewhat confused and confusing and is but indifferently illustrated. Tumors of the optic nerve head, by Nordmann, of Strasbourg, is short. The final chapter deals with abnormalities of the crystalline lens and was written by Duverger, of Limoges, and Velter, of Paris. It is rather conventional but thorough and systematic. The extensive biomicroscopic illustrations, mostly in color, are practical. Throughout the entire chapter can be seen the influence of Vogt. Thus, by and large, the fifth volume of the series is up to standard. But the two chapters by Bailliart and Amsler raise this volume to the high point of the four that have as yet appeared.

**The Physiology and Pharmacology of the Pituitary Body. Volume II.** By H. B. Van Dyke, Head of the Division of Pharmacology, Squibb Institute for Medical Research, New Brunswick, New Jersey. Cloth. Price, $4.50. Pp. 402, with 28 illustrations. Chicago: University of Chicago Press, 1939.

The first volume of this admirable monograph covered the literature to the middle of 1935; the second volume discusses advances reported to the middle of 1938, listing 1,418 additional papers published in these three years. The author has succeeded in weaving these together to a remarkable degree, so that the present volume is by no means a collection of disjointed addenda to the first but is a connected and readable account of pituitary physiology; and yet overlapping and repetition have been reduced to a minimum. Much of the literature cited receives only a bare mention, and the author is frequently content to quote apparently contradictory conclusions without attempting to reconcile them or to display a preference; but elsewhere he does not shrink from sharp criticism, and the most significant papers are discussed in some detail, often with illustrative tables or figures. The volume includes discussion of the afferent nature of the hypophysioportal blood vessels; of the cytology of the anterior lobe and its experimental modification; of the differences between pituitary gonadotropic hormones and those of chorionic origin, obtained from pregnancy urine or the serum of pregnant mares; of the part played by the pituitary in the development (not merely the activity) of the mammary glands; of the evidence, now regarded as conclusive, that the posterior pituitary has a genuine physiologic function as an endocrine organ, especially in controlling excretion of water; and of the antihormones. However, there is hardly any aspect of pituitary physiology and pharmacology which does not receive some attention. Possibly the least satisfactory section is that dealing with the pituitary in carbohydrate and fat metabolism; but as this subject is still in a confused state and is hard to discuss without a wide survey of metabolic processes as a whole, one sympathizes with the author's difficulties here. It should be noted finally that the scope of the book is exactly defined by the title, except that an anatomic chapter is included; clinical discoveries are quoted when they throw light on pituitary physiology or pharmacology, but the border between fundamental and applied physiology is crossed rarely and with caution. It is to be hoped that those who feel tempted to discuss the role of the pituitary in the etiology of diseases and disorders in terms of plausible analogies to our experimental knowledge of the gland will take the trouble to discover from these two volumes what that knowledge really amounts to.

**La toracoplastia en el tratamiento de la tuberculosis pulmonar.** Por Hernán D. Aguilar, adscripto a la Cátedra de clínica quirúrgica de Universidad de Buenos Aires. Tomo I: Introducción, historia, anatomía quirúrgica, fundamentos, indicaciones de la toracoplastia en relación o asociación con otros tratamientos. Tomo II: La operación, post-operatorio, modificaciones producidas por la toracoplastia, resultados, casuística. Paper. Pp. 765; 773-1504, with illustrations. Buenos Aires: Libreria y editorial "El Ateneo," 1938

The wealth of information included in these volumes is amazing. Starting from the beginning of the collapse treatment up to the present the author has covered the entire subject with encyclopedic detail. Every phase of thoracoplasty whether the technic of the operation itself, the indications for operation or the underlying physiologic concept of collapse therapy, is completely covered. The bibliography of some 600 articles is in itself astounding, especially when one realizes as one reads that this bibliography was not picked out of an index by title or used to overawe the reader but that the individual articles have been carefully read and their subject matter used to compile the text. The work is well illustrated, and the illustrations like the bibliography are apt and to the point. In its printing and arrangement the reader will be pleased to note the clear form used in American textbooks. The author's own method of thoracoplasty is carefully depicted and also the methods used the world over. The last half of the second volume is devoted to a careful study of 100 cases. In short, the book stands as a summary of modern thought on thoracoplasty. Every surgeon or physician particularly interested in the treatment of tuberculosis will want this work. It should be in the library of every tuberculosis sanatorium and general hospital.

**Atlas of Surgical Operations.** By Elliott C. Cutler, Moseley Professor of Surgery, Harvard University, Boston, and Robert Zollinger, Assistant Professor of Surgery, Harvard University. Cloth. Price, $8. Pp. 181, with 84 plates by Mildred B. Codding. New York: Macmillan Company, 1939.

This is a small volume containing large illustrations which portray more than fifty surgical procedures accurately and with considerable clarity. A few, for example of anastomoses of the gastrointestinal tract, are too crowded and small to permit easy understanding of important surgical points. The page opposite each illustration contains a brief statement concerning preoperative and postoperative care, procedure and anesthesia. The authors found it impossible to eliminate surgical indications completely for the methods described, and these are not presented with sufficient length. The atlas is of value in illustrating how a certain operation could be accomplished. Methods ranging from tonsillectomy to amputations are included. However, mention is not made of male genital surgery or of urinary tract surgery. Abdominal, intestinal and gynecologic operations are described in excellent detail. An attempt has been made to fill in the gap which exists in surgical textbooks between the theoretical phases of surgery and their practical applications. In the preface the authors state that surgical technic is rightfully not taught in medical school or in textbooks used by students. Later when the medical student is an intern or resident his former textbooks do not supply him with the precise information he desires. The authors feel that a concise accurate description of certain standard surgical technics is desirable for this phase of training. Naturally the methods described are those favored by the authors, but many interns or residents in other localities are never taught the methods described. For the more advanced graduate student of surgery the atlas is of less value if for no other reason than its brevity.

**Pharmacie galénique.** Par A. Goris, professeur de pharmacie galénique à la Faculté de pharmacie de Paris, et A. Liot, pharmacien supérieur adjoint au directeur de la pharmacie centrale des hôpitaux de Paris. Tomes I et II. Cloth. Price, 450 francs, per set. Pp. 897; 901-1917, with 302 illustrations. Paris: Masson & Cie, 1939.

This large two volume work of galenic pharmacy (in French) is not a treatise on this subject but rather a course on pharmacy that has been delivered by Prof. Albert Goris during the last dozen years before the Faculty of Pharmacy in Paris. While chiefly designed for students, it is also likely to be found useful by practicing pharmacists as well as by physicians. It contains an interesting chapter on the history of pharmacy and a chapter on the classification, choice and conservation of medicaments. The composition of vegetable substances and assay processes are next taken up, and the various forms of drugs, the various pharmaceutic processes and their resultant preparations occupy the remaining portions of these two volumes. The work is brought down to date in the second volume, much of the space of which is occupied by a discussion of ferments, organotherapy and opotherapy, vaccinotherapy, serotherapy and bacteriotherapy. A discussion of the forms of medicines and their administration, sterilization, disinfection and incompatibilities, as well as the preservation of medicaments, complete this monumental treatise on French pharmacy, which should find a place in this country in every pharmaceutic library making a pretense at completeness.

**Heparin: Its Chemistry, Physiology and Application in Medicine.** By J. Erik Jorpes, M.D., Assoc. Professor of Biochemistry, Karolinska mediko-kirurg Institutet, Stockholm. Cloth. Price, $2.50. Pp. 87, with 14 illustrations. New York & London: Oxford University Press, 1939.

This little book, appropriately dedicated to Prof. William H. Howell, in whose laboratory the original work on heparin was carried out, is a most useful review of our present knowledge of the subject. The chapters on the chemistry of heparin and those on the probable site of its formation, the mast cells of Ehrlich, give a coordinated picture of the brilliant researches which have been recently carried out in Stockholm by Jorpes and his collaborators. These results are of great interest not only to the physiologist and biochemist but also to the histologist, who has been in doubt as to the function of these mast cells ever since their discovery. While, as is natural, the work carried out in Stockholm is described in considerable detail, adequate reference is made to the original work in Professor Howell's laboratory, to the chemical and physiologic contributions from Toronto and to work in many other laboratories. Jorpes presents his own views on the chemistry of heparin. He believes that there are a variety of heparins and that the crystalline product of Charles and Scott does not necessarily represent the only active material. This point can be regarded as quite unsettled, but further chemical work will undoubtedly decide the issue. The experimental work on the effect of heparin on thrombus formation is described, and the evidence in favor of the physiologic significance of the anticoagulant is well presented. The results of clinical trials of heparin which have been carried out in Toronto and Stockholm are reviewed. While the author expresses the view that heparin will probably be a useful therapeutic agent, definite claims for its established therapeutic value are limited to the cases of thrombosis of the retinal veins that have been treated in Sweden. The present status of other clinical investigations is described. The book is well written and there are some excellent illustrations. The bibliography will be a valuable contribution to all who are interested in the field of blood clotting and thrombosis.

**The Vitamins: A Symposium Arranged Under the Auspices of the Council on Pharmacy and Chemistry and the Council on Foods of the American Medical Association.** Cloth. Price, $1.50. Pp. 637, with illustrations. Chicago: American Medical Association, 1939.

Vitamins now have an established place in therapeutics. In 1911 the word "vitamine" was coined to describe a factor in foods which would prevent or cure polyneuritis in the fowl. Later a large number of accessory food substances came to be known collectively as vitamins. At the present time more than thirty different chemical substances found in various foods have been demonstrated to have important nutritional functions, but only a few of these substances are of practical therapeutic significance. The amount of information available about the vitamins is so great that it is difficult even for experts to keep up with the literature. The present volume is a new compendium of recent authoritative information about the vitamins. The thirty-one chapters include discussions of the chemistry, physiology, pathology, pharmacology and therapeutics, methods of assay, food sources and human requirements of each of the important vitamins. This book should prove to be an indispensable volume for the library of every physician.

**Physical Aspects of Radium and Radon Therapy.** By Dr. C. E. Eddy, F.Inst.P., Physicist-in-charge, and Mr. T. H. Oddie, M.Sc., A.Inst.P., Physicist of the Commonwealth X-ray and Radium Laboratory, University of Melbourne. Commonwealth of Australia, Department of Health. Second edition. Paper. Pp. 57, with 9 illustrations. Canberra: L. F. Johnston, Commonwealth Government Printer, 1939.

Preparation of this booklet was instituted by the Health Department of the Commonwealth of Australia, under the direction of C. E. Eddy and T. H. Oddie. Its primary purpose in the general campaign against cancer is to provide certain practical physical data which are necessary for effective radium and radon therapy. The booklet contains a cursory review of the physical nature of radioactivity with specific reference, of course, to the radium series. The important characteristics of the products of decay of radium are well outlined, and included are valuable tables presenting the decay of radon and the rise of radium B, radium C and gamma ray activity. A portion of the publication is devoted to detailed description of radium and radon containers with which the commonwealth health department is provided. This obviates a number of errors which might arise, facilitates the handling and care of the radium and radon applicators, and serves to acquaint the therapist with the exact type of radium or radon issue which he receives. The section on gamma ray dosimetry has been revised and, although not completely inclusive, it contains the recent work on gamma ray measurements. It describes and elaborates on the details necessary for precise gamma ray dosimetry and presents several important tables for the measurement of gamma ray dosage. Although the distribution of the dosage by various types and arrangements of applicators is not included, the excellent bibliography which is appended would serve to indicate the source of the necessary information. The booklet provides a ready reference work for certain standard tables necessary for the calculation of radium and radon dosages and provides a further impetus for the quantitative determination of these dosages.

**Tumors of the Skin: Benign and Malignant.** By Joseph Jordan Eller, M.D., Attending Dermatologist, City Hospital, New York City. Cloth. Price, $10. Pp. 607, with 403 illustrations. Philadelphia: Lea & Febiger, 1939.

The author's purpose in presenting in a single volume his experience of many years in the diagnosis and successful treatment of tumors of the skin has been admirably achieved and is almost monographic in its scope. The clinical and pathologic features of the precancerous and cancerous lesions of the skin are carefully correlated by the text and the accompanying illustrations. The therapeutic principles emphasize both the relative importance of surgical procedures and the necessary technical knowledge in the modern adaptation of roentgen and radium therapy to the cure of cutaneous cancer. There are valuable charts and tables on radiation dosage in the appendix. The individual case reports are instructive and the numerous diagrammatic examples will be found helpful in dealing with epitheliomas in special locations. Of particular value to the dermatologist and radiotherapist are the sections on carcinoma of the lip, mouth and genitalia. The surgeon will find many useful data in the chapter on cutaneous surgery and the plastic repair which may be necessary following the removal of neoplasms of the skin. The references to the literature appended to each chapter bear the evidence of careful selection. Altogether the author is to be congratulated on having produced a sound, dependable volume in this special field of cutaneous diseases.

**Textbook of Nervous Diseases.** By Robert Bing, Professor of Neurology, University of Basel, Switzerland. Translated and enlarged by Webb Haymaker, Assistant Clinical Professor of Neurology, University of California, San Francisco. From the fifth German edition. Cloth. Price, $10. Pp. 838, with 207 illustrations. St. Louis: C. V. Mosby Company, 1939.

This is the English translation of Bing's Lehrbuch der Nervenkrankheiten. It contains thirty chapters. The translator has rearranged and augmented the original for adaptation to American usage. Despite this the cogent observations and conclusions of Professor Bing are retained. If in neurology one must be methodical and accurate, it follows that the discussion of entities should facilitate an easy understanding as far as possible instead of forcing the student to memorize signs and symptoms. Professor Bing has written this book with the former idea in mind. All the chapters are abreast of the time and are written for the student, constituting as well an excellent reference book for the neurologist. Following each section there is a large bibliography of both American and foreign contributors. Considerable discussion regarding treatment together with written prescriptions are to be found. There are chapters on peripheral nerves, dyskinesias, muscular atrophies, degenerative diseases, demyelinating disorders, syphilis of the central nervous system, arteriosclerosis and hemorrhages, infectious diseases and intoxications, aphasia, apraxia and agnosia, tumors, diseases of the cerebellum, disease of the endocrine glands, diseases of the autonomic system, convulsive disorders, headaches and psychoneuroses. The illustrations are good.

**Cæsarean Section: Lower Segment Operation.** By C. McIntosh Marshall, F.R.C.S. Cloth. Price, $6.50. Pp. 230, with 109 illustrations. Baltimore: William Wood & Company, 1939.

The author favors the transverse incision in the lower uterine segment and states numerous reasons for his preference. For anesthesia he employed ether in about one fourth of his cases (sixty), local infiltration in slightly less than one third (seventy-four) and spinal anesthesia in a little less than one half (112). The author's frequent use of spinal anesthesia is surprising in view of his own statement, which he emphasizes by italicizing, that "any obstetrician who sets out to perform a large series of cesarean sections under spinal anesthesia must be prepared to face a possible mortality of not less than 1 per cent due to this cause alone." The author specifies ways of making spinal anesthesia safer in cesarean section but, even if every precaution is taken, spinal anesthesia is nevertheless more dangerous for obstetric patients than any other anesthetic. Throughout the book there is abundant evidence of the author's extensive reading on the subject of the cervical cesarean section and his unbiased attitude toward the views of other writers. The reviewer can offer only one criticism. The author failed to discuss the question of uterine scars and how they heal after cervical cesarean section operations. A few years ago Greenhill and Bloom reported such a study made on a large series of scars removed at subsequent cesarean sections. The author is to be congratulated on the results he has obtained in his own series of cases. He has performed 246 lower segment operations without a single maternal death. This speaks highly for both the operation and the operator. The author is to be further commended for having produced such an excellent book. It is written in a most fluent style and it is abundantly and clearly illustrated. It should be carefully studied by every obstetrician and by all other physicians who perform cesarean section.

**The Rectum and Colon.** By E. Parker Hayden, A.B., M.D., F.A.C.S., Assistant in Surgery in the Harvard Medical School, Boston, Massachusetts. Cloth. Price, $5.50. Pp. 434, with 169 illustrations. Philadelphia: Lea & Febiger, 1939.

The first chapter contains a brief discussion of the anatomy of the terminal portion of the colon. The second chapter, on methods of examination, contains many illustrations of surgical instruments. Two illustrations show the Sims and knee-chest positions. The third chapter, on anorectal symptoms, includes discussions of bleeding, pain, pruritus, variation in bowel habits and protrusion. These subjects are dealt with briefly. The remainder of the book is composed of chapters on anal pruritus, anesthesia, preoperative and postoperative care, fissure, hemorrhoids, prolapse, perirectal and rectal infections, fistula, venereal lymphopathy, other infectious genital diseases, diarrhea and colitis, tuberculosis and actinomycosis, diverticulosis and diverticulitis, benign tumors, multiple polyposis, carcinoma, melanosis, magacolon and volvulus, and injuries and foreign bodies.

**Beesly and Johnston's Manual of Surgical Anatomy.** Revised by John Bruce, M.B., F.R.C.S., Assistant Surgeon, Edinburgh Royal Infirmary, Edinburgh, and Robert Walmsley, M.D., Lecturer on Anatomy, University of Edinburgh, Edinburgh. Fifth edition. Cloth. Price, $6.50. Pp. 733, with 187 illustrations. New York & London: Oxford University Press, 1939.

Works on surgical anatomy are most successful when they strike a happy medium between the two broad but related fields. This manual exemplifies such a medium. The descriptive anatomy is clear and precise and uses anglicized terms to great advantage. The surgical importance of the anatomic parts is included in the descriptive text. Unfortunately the illustrations, which are excellent of the anatomy involved, are not as well directed from the surgical point of view. Additional illustrations of surgical approaches and surgical anatomy would more satisfactorily complement the text and add to the excellence of the manual.

**The Plant Alkaloids.** By Thomas Anderson Henry, D.Sc., Director, Wellcome Chemical Research Laboratories, London. Third edition. Cloth. Price, $12. Pp. 689. Philadelphia: P. Blakiston's Son & Co., Inc., 1939.

As in previous editions, the enumerating of plant sources is complete, although many alkaloid-bearing plants have been omitted. The physiologic actions are limited, yet many pertinent references are given. Considerable space has been saved by omitting details of their estimation. The text classifies alkaloids according to the old nuclear type which was followed in preceding editions. Sections on isoquinoline and indole groups have been enlarged. The section on strychnos alkaloids has been brought down to date, although condensed. Several groups, such as lupinanes, phenanthridine, pyrrolidin and quiniazoline, have been added, while those common purine bases are deleted. The volume is indispensable and should be in every scientific library.

**Fortschritte auf dem Gebiet der Nervenkrankheiten. IV.** Oeynhausener Ärztevereinskurs 13. und 14. Mai 1939. Herausgegeben von der Ärztlichen Vereinigung Bad Oeynhausen. Boards. Price, 12 marks. Pp. 178, with 63 illustrations. Dresden & Leipzig: Theodor Steinkopff, 1939.

This brochure contains ten excellent essays on current neurologic problems by various authorities in the field. Among the subjects considered are cerebral hemorrhage, avitaminosis, encephalitis, toxic myelopathy and extrapyramidal diseases. The articles are succinct, well written and illustrated. The volume as a whole is of great interest.

# Bureau of Legal Medicine and Legislation

## MEDICOLEGAL ABSTRACTS

**Abortions: Admissibility of Testimony of Medical Examiner.**—The defendant, described in the record as a trained nurse, was convicted under an indictment charging that she, with intent to procure a miscarriage, unlawfully used an instrument on the body of a woman and that in consequence thereof the woman died. From this judgment of a conviction, the defendant appealed to the Supreme Judicial Court of Massachusetts.

The medical examiner for the district in which the death occurred, who performed an autopsy on the body of the deceased on the day of her death, was called as a witness by the Commonwealth. He testified at some length as to what he did and what he observed in performing the autopsy. Briefly stated, he testified that he found a one-quarter inch (0.64 cm.) puncture wound in the top of the uterus and, just below the wound, evidence of a septic condition of a portion of the placenta and a condition of sepsis elsewhere in the contents of the abdominal cavity which, in his opinion, originated in the vicinity of the puncture wound at a time between nine and twelve days before the death; that it was impossible to determine the stage of pregnancy; that in his opinion the puncture wound could have been caused only by the introduction of a foreign instrument into the uterus; that the death resulted from general sepsis associated with purulent peritonitis, and that this condition, which caused the death, was due to instrumental interference with pregnancy. The defendant contended, in the first place, that the medical examiner was not shown to possess the qualifications to be permitted to testify as an expert witness. The witness, however, testified that he had been medical examiner for more than six years and for thirty-nine years had been in general practice as a physician and surgeon, particularly in the field of obstetrics. The decision of the preliminary question as to whether the witness was qualified to give expert testimony, the Supreme Judicial Court said, was for the trial judge, and that decision is conclusive in view of the absence of any evidence that it was erroneous as a matter of law. The trial court did not err in admitting the testimony of the medical examiner that certain knitting needles exhibited to him when on the witness stand by the district attorney were of a type and kind capable of causing an abortion by their introduction into the uterus of a pregnant woman. The needles were marked for identification and later, on the admission by the defendant that they were found in her house after the death of the deceased, they were introduced in evidence. A qualified medical expert, the court said, who has found in a woman conditions indicating that there has been an abortion by instrumental means, may give his opinion as to the kind of an instrument that would produce the conditions found. His knowledge of anatomy and his professional experience give him a capacity to express an opinion in matters "beyond the range of general knowledge."

The defendant further complained because the trial court excluded the following question put to the medical examiner on cross examination:

> Is it possible for a woman to use a drug, such as ergot or pills containing ergot or other drugs, to abort herself?

Counsel for the defendant stated that he based the question on a statement which, he asserted, was made by the deceased as shown by the record of a hospital where she was under treatment for a period preceding her death. In response to a question from the trial judge, he said that his contention was not that the statement was admissible as a dying declaration but that it was admissible because it was made to a physician under whose treatment the defendant then was. The physician referred to was not called as a witness. The defendant's counsel, the court pointed out, proceeded in this matter on the erroneous assumption that a physician could testify to a statement made to him by his patient as to the cause of the patient's condition. A physician, when a witness, may in his testimony repeat statements made to him by a patient as to the patient's injuries, bodily or mental ailments, pains, symptoms, feelings or conditions, as the basis of an opinion formed by him and expressed by him on the witness stand. He cannot, however, testify as to a statement, made to him by the patient, of the cause of the patient's injuries or conditions when the statement is not made in such circumstances as to make it admissible as a dying declaration.

The trial court refused to admit in evidence a portion of the hospital record which contained a purported statement of the deceased as to the cause of her condition. The rest of the hospital record was admitted in evidence. Hospital records, the court said, kept as required by law in Massachusetts, are admissible only "so far as such records relate to the treatment and medical history" of a patient. Any statement by the deceased, as to the cause of her condition, appearing in the hospital record, like such a statement made to her physician, was inadmissible. The exclusion of the statement in the hospital record relating to the cause of her condition, therefore, was proper.

After a consideration of all assignments of error, the Supreme Judicial Court could find no error of law, and the judgment of conviction was affirmed.—*Commonwealth v. Dawn (Mass.), 19 N. E. (2d) 315.*

**Hospitals: Failure Timely to File Additional Notice of Lien Deprives Hospital of Lien.**—A New York law, granting a hospital in which a person injured through the fault of another is treated a lien on all recoveries or settlements had by the injured person by reason of his injury, provides that no such lien shall be effective unless written notice of it is filed in the office of the appropriate county clerk "prior to the payment of any moneys to such injured person." The law also provides that in addition to the preliminary notice of lien just referred to a hospital must also file in the county clerk's office "within five days of the discharge of any injured person, an additional notice of lien, duly verified, which shall show the total hospital charges which have accrued and no lien hereunder shall exceed this amount." The Society of New York Hospital filed a preliminary notice of such a lien prior to receipt by the injured person of any moneys in settlement of his claim for the injuries for which treatment was given in the hospital. The hospital, however, did not file the additional notice referred to until seven days after the injured person was discharged from the hospital. In the opinion of the supreme court, appellate division, first department, New York, with two judges dissenting, the failure of the hospital to file the additional notice within five days after the patient's discharge from the hospital deprived the hospital of its lien on the settlement received by the patient.—*Melichar v. Michelson, Application of Society of New York Hospital (N. Y.), 9 N. Y. S. (2d) 1016.*

# Society Proceedings

## COMING MEETINGS

American Association of Anatomists, Louisville, Ky., Mar. 20-22. Dr. E. R. Clark, Dept. of Anatomy, Univ. of Pennsylvania School of Medicine, Philadelphia, Secretary.

American Association of Pathologists and Bacteriologists, Pittsburgh, Mar. 21-22. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.

American Orthopsychiatric Association, Boston, Feb. 22-24. Dr. Norvelle C. La Mar, 149 East 73d St., New York, Secretary.

American Physiological Society, New Orleans, March 13-16. Dr. Philip Bard, Johns Hopkins Medical School, Baltimore, Secretary.

American Society for Experimental Pathology, New Orleans, March 13-16. Dr. Paul R. Cannon, Dept. of Pathology, University of Chicago, Chicago, Secretary.

American Society for Pharmacology and Experimental Therapeutics, New Orleans, March 13-16. Dr. G. Philip Grabfield, 319 Longwood Ave., Boston, Secretary.

Annual Congress on Medical Education and Licensure, Chicago, Feb. 12-13. Dr. W. D. Cutter, 535 North Dearborn St., Chicago, Secretary.

Federation of American Societies for Experimental Biology, New Orleans, Mar. 13-16. Dr. D. R. Hooker, 19 West Chase St., Baltimore, Secretary.

Mid-South Post-Graduate Medical Assembly, Memphis, Tenn., Feb. 13-16. Dr. A. F. Cooper, Goodwyn Institute Bldg., Memphis, Tenn., Secretary.

Society of Surgeons of New Jersey, Camden, Jan. 31. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

### American Heart Journal, St. Louis

**18:** 519-646 (Nov.) 1939

Rate of Circulation in Arteries and Veins of Man: I. Studies of Normal Subjects and of Those with Occlusive Arterial Disease and Hyperthyroidism. W. F. Kvale and E. V. Allen, Rochester, Minn.—p. 519.

Id.: II. Studies of Hypertension, of Orthostatic Hypotension and of Effects of Sympathectomy. W. F. Kvale, E. V. Allen and A. W. Adson, Rochester, Minn.—p. 537.

Id.: III. Influence of Temperature of Skin, Digestion, Posture and Exercise. W. F. Kvale and E. V. Allen, Rochester, Minn.—p. 546.

Id.: IV. Error in Sodium Cyanide Method of Determining Speed of Venous Blood Flow. W. F. Kvale and E. V. Allen, Rochester, Minn.—p. 557.

Aneurysm of Pulmonary Artery: Review of Literature and Report of Two New Cases. L. J. Boyd and T. H. McGavack, New York.—p. 562.

Cardiac Metastasis from Malignant Melanoma: Report of Four Cases. V. Moragues, St. Louis.—p. 579.

### American J. Digestive Diseases, Huntington, Ind.

**6:** 589-692 (Nov.) 1939

Intubation Studies of Human Small Intestine: XVII. Effect of Atropine and Belladonna on Motor Activity of Small Intestine and Colon. K. A. Elsom and J. L. Drossner, Philadelphia.—p. 589.

Id.: XVIII. Effect of Pitressin and of Amphetamine (Benzedrine) Sulfate on Motor Activity of Small Intestine and Colon. K. A. Elsom, P. M. Glenn and J. L. Drossner, Philadelphia.—p. 593.

Observations on Oral Administration of Citrated Blood in Man: I. Effects on Blood Urea Nitrogen. L. Schiff, R. J. Stevens, S. Goodman, Ellen Garber and Anna Lublin, Cincinnati.—p. 597.

Comparative Value of Serial Hippuric Acid Excretion, Total Cholesterol, Cholesterol Ester and Phospholipid Tests in Diseases of Liver: I. Results of Tests. F. W. White, E. Deutsch and S. Maddock, with assistance of Virginia Downing and Dorothy Jensen, Boston.—p. 603.

Effects of Vitamin Deficiency on Gastrointestinal Tract. D. L. Wilbur, San Francisco.—p. 610.

Clinical Value of Quantitative Vitamin Determinations. T. T. Mackie and W. H. Eddy, with assistance of Ruth Bach, New York.—p. 617.

Clinical Observations on Possible Relationship of Digestive Tract Disease to Type of Osteoporosis. C. L. Brown, S. R. Vogel and R. P. Meader, Philadelphia.—p. 628.

*Role of Circulation in Production of Peptic Ulcer. R. S. Boles, Helena E. Riggs and J. O. Griffiths, Philadelphia.—p. 632.

Massive Hemorrhage from Peptic Ulcer: Study Based on Vital Statistics of City of Seattle During Four Years and on Personal Experience in Private Practice. J. M. Blackford and W. S. Cole, Seattle.—p. 637.

Results of Treatment of Massive Gastric Hemorrhage. A. F. R. Andresen, Brooklyn.—p. 641.

Gastrointestinal Hemorrhage from Otherwise Symptomless Lesions, with Special Reference to Duodenal Ulcer. G. B. Eusterman and C. G. Morlock, Rochester, Minn.—p. 647.

Some Unusual Gastro-Enterologic Surgical Problems. F. H. Lahey and S. F. Marshall, Boston.—p. 654.

**Circulatory Insufficiency and Peptic Ulcer.**—In evaluating the role of circulatory insufficiency in the mechanism of gastric ulcer, Boles and his colleagues analyzed a series of 161 cases which at necropsy presented acute lesions of the gastric mucosa. Although the cause of death varied widely, the cases can be divided into four primary categories: cardiovascular, metabolic, cerebral and anemic. In order to facilitate comparison with clinical cases of ulcer and to minimize the cardiovascular insufficiency of older age groups, the cases were chosen from the younger age levels: the average was 33 years, and 80 per cent of the subjects were less than 50 years of age. Although the lesions of the gastric mucosa were acute, microscopic study with differential stains demonstrated that in the area of the mucosal lesion all the layers of the wall of the stomach were involved. Further, although the mucosal degenerations were acute the alterations in the deeper layers were essentially chronic. In no area examined was the mucosa alone involved. The mucosal alterations were invariably superimposed on chronically degenerated submucosal and muscular layers. Conversely, it was possible to demonstrate areas adjacent to the acute mucosal lesions in which normal healthy mucosa had regenerated despite chronic alterations in the deeper layers. Although the nature of gastric lesions strongly suggests an insufficiency of the circulation, a study of them gives no clue whether this condition is a local one or is due to general insufficiency with its frequently resulting widespread stasis. For this reason, using the same criteria employed in the microscopic study of the gastric lesion, namely degeneration of parenchymatous cells with proliferation of connective tissue, the authors attempted an evaluation of the presence of generalized circulatory insufficiency by examining the brain, liver and kidney in cases presenting acute lesions of the gastric mucosa. The evidence of impaired circulation found in these organs would make it reasonable to assume that the anatomically inadequate blood supply and the intrinsic vasomotor innervation of the stomach do not cause the gastric lesion through local disturbances alone but merely intensify a local picture incident to the generalized insufficiency of the circulation. The conclusion is that, regardless of etiology, focal gastric lesions are the result of chronic circulatory insufficiency to all the structures of the gastric wall. Generalized circulatory insufficiency may be established through quantitative, qualitative or vasomotor alterations in the circulatory system.

### American Journal of Medical Sciences, Philadelphia

**198:** 589-736 (Nov.) 1939

Considerations Bearing on Treatment of Arthritics. R. Pemberton, Philadelphia.—p. 589.

*Use of Sulfapyridine in Treatment of Gonococcic Urethritis in the Male. S. H. Johnson 3d, P. R. Leberman and D. S. Pepper, with technical assistance of Helen Lynch, Philadelphia.—p. 594.

Elimination of Effect of Chemical Mediator of Renal Hypertension. S. Rodbard and L. N. Katz, Chicago.—p. 602.

Response in Blood Pressure of Hypertensive Patients to Acetyl-Beta-Methylcholine. D. E. Engle and M. W. Binger, Rochester, Minn.—p. 609.

*Chronic Hypertrophic Spinal Pachymeningitis. G. Wilson, H. Bartle Jr. and J. S. Dean, Philadelphia.—p. 616.

Study of Quick Method for Quantitative Determination of Prothrombin with Suggested Modifications. F. J. Pohle and J. K. Stewart, Madison, Wis.—p. 622.

Observations on Human Blood Stored at 4 to 6 Centigrade. W. P. Belk, N. W. Henry and Florence Rosenstein, Philadelphia.—p. 631.

*Collection and Preservation of Placental Blood for Transfusion Purposes. C. A. Gwynn and J. B. Alsever, Syracuse, N. Y.—p. 634.

Blood Studies on the Newborn: I. Determination of Hemoglobin, Volume of Packed Red Cells, Reticulocytes and Fragility of Erythrocytes Over a Nine Day Period. T. R. Waugh, F. T. Merchant and G. B. Maughan, Montreal.—p. 646.

Studies on Circulation in Pregnancy: IV. Venous Pressure Observations in Normal Pregnant Women, in Pregnant Women with Compensated and Decompensated Heart Disease and in Pregnancy "Toxemias." K. J. Thomson, Mount McGregor, N. Y.; D. E. Reid and M. E. Cohen, Boston.—p. 665.

Cor Pulmonale Due to Obstruction of Pulmonary Artery by Syphilitic Aortic Aneurysms. C. F. Garvin and M. L. Siegel, Cleveland.—p. 679.

Study of Incidence of Coronary Occlusion and Angina Pectoris in White and Negro Races. G. E. Burch and N. W. Voorhies, New Orleans.—p. 685.

Experimental Localized Auricular Necrosis: Electrocardiographic Study. A. Sanders, Chicago.—p. 690.

Metrazol Convulsive Shock Therapy in Affective Psychoses: Follow-Up Report of Results Obtained in Sixty-One Depressive and Nine Manic Cases. A. E. Bennett, Omaha.—p. 695.

*Metabolic and Cardiovascular Effects of Intramuscular Injections of Adrenalin and of Amphetamine. D. B. Dill, R. E. Johnson and C. Daly, Boston.—p. 702.

**Sulfapyridine for Gonococcic Urethritis.**—Johnson and his associates used sulfapyridine for the treatment of eighty male patients with gonococcic urethritis. There were seventy cases of acute, six of subacute and four of chronic urethritis. Forty-one of the patients had had from one to seven previous attacks of gonorrhea. Gram-negative intracellular diplococci were demonstrated in Gram stains of the urethral discharge of all the patients before treatment was instituted. The patients were seen when possible at intervals of two or three days, the urine being examined by the two glass test. In the majority of cases blood sulfapyridine levels were taken after four days and again after ten and fourteen days of treatment. The dosage scale, chosen arbitrarily and adhered to in a routine way unless some untoward reaction occurred, consisted of 3 Gm. of sulfapyridine daily for four days and then 2 Gm. daily for from six to ten days. This was given in divided doses. The following provocative tests of cure were employed when the urine had remained clear for from four to six days following discontinuance of clinical symptoms: massage of the prostate and seminal vesicles, passage of bougies and sounds with digital stripping of

the anterior portion of the urethra, consumption of alcoholic drinks, sexual intercourse with a condom and one or two negative cultures of the prostatic secretion. Of the eighty patients, seventeen either failed to complete the course of treatment or failed to complete the tests of cure. Of the remaining sixty-three patients followed for two or more months, fifty-four of whom had acute urethritis, forty-two (77.8 per cent) were cured. The four who had subacute urethritis were cured, and of the four who had chronic urethritis all but one were cured. In all, there were fifty patients (79.2 per cent) who were classified as cured. The average duration of urethral discharge in the cured patients after the institution of treatment was 2.77 days. This represents a remarkable advance over the older forms of treatment with sedation and local therapy, with which from ten days to two weeks almost invariably elapsed before the same improvement occurred. In the cases of acute urethritis the average duration of discharge was 2.93 days, in the subacute cases it was 1.8 days and in the chronic cases it was 2.3 days. There were nineteen patients in the series who had been previously treated with, and were resistant to, one or more of the sulfanilamide group of preparations. Of these, thirteen were cured with sulfapyridine.

**Chronic Hypertrophic Spinal Pachymeningitis.**—Wilson and his colleagues collected fifteen cases of hypertrophic spinal pachymeningitis (twelve with necropsies) and they summarize some of the principal clinical and pathologic features of the condition. Clinically the prominence of pain, sensory disturbances, ataxia, pyramidal and lower motor neuron symptoms and vesical dysfunction all had adequate pathologic bases. No symptom or syndrome can be regarded as pathognomonic. In fact, from the case studies syphilitic hypertrophic pachymeningitis, although showing an affinity for the cervical and dorsal regions, cannot often be regarded as an exclusively localized process but should be considered rather as a regional manifestation of a usually more generalized meningovascular syphilis. In ten of the fifteen cases definite cerebral symptoms were clinically manifest. The clinical picture in two cases simulated cord tumor so closely that laminectomies were performed. One of these cases showed partial block and negative serologic studies and the other showed no block, a negative spinal fluid Wassermann reaction but signs of fairly definite level (however the blood Wassermann reaction in this case was positive). Correlating the clinical and pathologic diagnoses in the twelve necropsies, in only one instance was any clinical mention made of pachymeningitis, the clinical diagnoses being "myelitis," "cerebrospinal syphilis," "dementia paralytica with tabes" and in one instance a diagnosis of amyotrophic lateral sclerosis. The authors believe that the term "myelitis" in these cases not only is a pathologic misnomer but draws attention from the nature of the process. It also invites an easy but sometimes unjustifiable therapeutic pessimism. The major pathologic process is in the meninges, and cord changes are largely secondary to embarrassed blood supply or direct compression of the roots or rim of the cord. If medical therapy fails, surgical decompression should be given more serious consideration in such cases.

**Placental Blood for Transfusion.**—In the collection of placental blood for transfusion, Gwynn and Alsever recommend that the following conditions should determine whether the blood is suitable for collection: The mother must be free from transmissible disease; the membranes must not have been ruptured more than forty-eight hours; there must not be obvious infection; the baby must be at or near term; the baby may not have asphyxia pallida, and the presentation may not be breech or transverse. Before blood is collected, antepartum Wassermann and flocculation tests of the blood of all mothers are performed. As an added precaution, blood is taken from the cord after delivery of the placenta for serologic examination. The authors list the equipment that they use. The preserving fluid is made up so that each thousand cubic centimeters contains 20 Gm. of dextrose, 5 Gm. of sodium citrate (0.5 per cent) and 4.6 Gm. of sodium chloride. The final solution is isotonic. It is made as two solutions—one containing the dextrose, the other the salt and citrate, each in 500 cc. volume. These are then apportioned 50 cc. to a flask and sterilized; then one of each type is poured into the collecting flask just before the blood is collected. As soon as the baby is born the cord is clamped and cut. The baby is attended to first and then the blood is collected (each step of the collection is described). During the entire collection the assistant gently agitates the flask with a rotary motion to prevent the blood from clotting before it is thoroughly mixed with the preserving fluid. When the flow of blood becomes slow, pressure is applied to the fundus of the uterus through the abdomen to force out the remaining blood. When this is accomplished, the cord is gently stripped until there is no more blood in the vessels. The last bit of blood is collected in two 65 mm. tubes, 3 drops going into a tube containing the preserving fluid and approximately 1 cc. being collected in the other tube. A third tube is used to collect blood for the cord Wassermann test. The two small tubes are placed in the medicine glass. The funnel is removed, and the flask is sealed with a rubber cap. Once again the blood is thoroughly agitated with a rotary motion to ensure complete mixing. The flask and each of the little tubes are labeled with the patient's name, date and Wassermann reaction, and all are placed in the ice box. The flask is not opened again until the blood is to be used for a transfusion. Every flask of blood is kept in storage for ten days, and then if its appearance is normal it is ready for use. By normal appearance is meant that the rubber cap shows the presence of a slight vacuum and that the supernatant plasma and preserving fluid are clear yellow with, at most, a just visible tinge of hemolysis immediately above the layer of settled red cells. If either or both are not present, the collection is discarded as possibly contaminated. The ice box that the authors use for storage is so equipped that it maintains a constant temperature between 34 and 35 F. In using the blood for a transfusion, the blood group of the recipient is first determined and then complete cross matching is carried out with each of the desired number of flasks containing blood of the same group. This is done with the small tubes of cells and serum. The compatible flasks of blood are rotated gently to obtain an even suspension and then they are ready for use. It is not necessary to warm the blood before using it, as it will be nearly at room temperature when it enters the patient's vein. Heating preserved blood may be a factor in producing reactions. When the blood is nearly ready an intravenous infusion of isotonic saline solution is started on the patient, an open buret being used. The prepared blood is poured into the buret through a funnel the top of which is covered by six thicknesses of washed sterile gauze and allowed to run in by gravity. It is more or less characteristic of preserved blood to have a few small soft clots present in the flask. This may be due to the action of small amounts of Wharton's jelly. These are strained out by the gauze. The second flask of blood is poured into the buret when the first has almost completely run in, and the two may be separated by a small amount of saline solution. The speed at which the blood is allowed to flow should be slow at first (from 3 to 5 cc. per minute) but may be increased as the transfusion continues to from 10 to 15 cc. per minute. From their studies the authors find that the labor mechanism of the patient from whom the blood is collected is not affected. Therefore the procedure is not harmful to her. The isotonic preserving solution used will satisfactorily preserve the blood for a period of from eight to ten weeks in a condition suitable for transfusion use.

**Effects of Epinephrine and Amphetamine.**—Dill and his co-workers compared the effects of epinephrine and amphetamine on the utilization of carbohydrate, the concentration of sugar and lactic acid in blood and of acetone bodies in blood and urine, the oxygen consumption, the acid-base balance, the pulse and the blood pressure. The observations were made over periods of four hours while the subjects, four normal fasting men, were reclining quietly on a bed. In summary the authors state: Intramuscular injections of epinephrine did not change or slightly increased the proportion of carbohydrate utilized during the period in which blood sugar and lactate were elevated. Acetone bodies in the blood and the urine fluctuated within the normal range. Amphetamine did not modify carbohydrate utilization or the concentrations of sugar, lactate or acetone bodies in the blood. It had a calorigenic effect that was smaller in magnitude but more sustained than that of epinephrine. The rise in systolic blood pressure after amphetamine was greater in one subject, and was more sustained than after epinephrine in all subjects. In contrast with epinephrine, amphetamine produced a small but consistent rise in diastolic pressure.

## American Journal of Public Health, New York

**39:** 1193-1282 (Nov.) 1939

Orientation in Public Health. J. W. Mountin, Washington, D. C.—p. 1193.
The Problem of Maternity: Survey and Forecast. L. I. Dublin, New York.—p. 1205.
Industrial Hygiene: Retrospect and Prospect. J. J. Bloomfield, Washington, D. C.—p. 1215.
Sylvatic Plague. K. F. Meyer, San Francisco.—p. 1225.
Types of Tubercle Bacilli in Lesions of Garbage-Fed Swine. W. H. Feldman, Rochester, Minn.—p. 1231.
Methods of Poultry Evisceration and Packing and Their Relation to Health. C. E. Edmunds, Chicago.—p. 1239.
*Typhoid Fever and Vegetable Juices (Carrot). J. C. Geiger, San Francisco.—p. 1244.
Outbreak of Staphylococcus Milk Poisoning from Pasteurized Milk. J. F. Hackler, Stillwater, Okla.—p. 1247.
Comparison of MacConkey's Broth and Standard Lactose Broth as Mediums for Detection of Coliform Organisms in Water. M. H. McCrady, Montreal.—p. 1250.

**Typhoid from Vegetable Juices.**—The importance of adequate supervision and control of food manufacturing and dispensing establishments is further emphasized by Geiger, who reports two cases of typhoid. The patients ate their lunch at a common eating place, a food store specializing in the sale of vegetable juices (carrot). The usual routine investigation of the food handlers and the examination of the food products were carried out. The investigation included stool examinations of all known family contacts. The vegetable juices sold by the food store showed a high bacterial count. It was found that pasteurization of these juices had been incompletely carried out, or omitted, in violation of the regulations of the department of public health effective Nov. 3, 1936. The worker recently assigned to the direct preparation and handling of the vegetable juices was found to be a typhoid carrier. Stool specimens were positive for Eberthella typhosa on three successive examinations. All other laboratory examinations were negative. This typhoid carrier had worked as a domestic in several families and gave a history of having had typhoid thirty-four years previously. She admitted that the vegetable juices had generally not been pasteurized. The author states in conclusion that the foregoing facts illustrate the necessity for close, frequent and careful supervision by health authorities over food establishments preparing and serving foods of any character, but particularly, as in this instance, unheated or partially heated extracts and juices from vegetables.

## Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

**23:** 685-848 (Nov.) 1939

Massive Dose Arsenotherapy of Syphilis by Intravenous Drip Method. H. T. Hyman, L. Chargin and W. Leifer, New York.—p. 685.
Administrative Problems in Control of Syphilis. R. A. Vonderlehr, Washington, D. C.—p. 692.
Unsolved Clinical Problems of Syphilology. J. E. Moore, Baltimore.—p. 701.
Laboratory Problems in Study of Syphilis. H. Eagle, Baltimore.—p. 712.
Esthiomene: Form of Granuloma Inguinale. A. G. Schoch and L. J. Alexander, Dallas, Texas.—p. 718.
Lag in Reversal of Blood Serologic Tests Under Bismuth in Course of Combined Chemotherapy. H. Beerman, Philadelphia.—p. 724.
Comparative Studies in Serologic Methods, with Particular Reference to Kline, Kahn and Kolmer Methods. L. Tuft and Carola E. Richter, Philadelphia.—p. 731.
Davies-Hinton Test of Spinal Fluid. H. H. Marquis, San Francisco.—p. 738.
*Peripheral Neuritis During Administration of Sulfanilamide. J. R. Waugh, Norfolk, Va.—p. 745.
Interstitial Keratitis in Patients with Neurosyphilis of Congenital Origin, with Discussion of Fever as Precipitating Factor of Keratitis in Paretic Variety. I. Kopp and H. C. Solomon, Boston.—p. 751.
*Studies in Tissue Concentration of Bismuth in Man. J. R. Scholtz and A. L. Chaney, Los Angeles.—p. 759.
Trisodium Arsphenamine Sulfonate (Trisodarsen) in Treatment of Congenital Syphilis: Five Year Study in Treatment of 147 Cases. T. B. Givan and G. Villa, Brooklyn.—p. 771.
Diagnosis and Therapy of Gastric Crises. D. J. Simons, New York.—p. 782.

**Peripheral Neuritis from Sulfanilamide.**—Waugh reports a case of peripheral neuritis with foot drop occurring during treatment with sulfanilamide in a case of gonorrhea. Only two other cases of peripheral neuritis and one of optic neuritis occurring during sulfanilamide therapy are to be found in the literature. This case, the author points out, is the only one that has occurred on his service among approximately 650 hospitalized patients who have received intensive sulfanilamide treatment for gonorrhea and other urologic conditions.

**Bismuth Concentration in Human Tissues.**—Scholtz and Chaney determined the concentration of bismuth in the tissues in fifteen cases of syphilis that came to necropsy. It was known that bismuth compounds were given intramuscularly in all these instances. All of the deaths were due to some acute illness, usually of not more than several weeks' duration, and not from debilitating wasting disease. Therefore there was no shrinkage of organs or tissues which might have had a tendency to concentrate the bismuth in the tissues. The exact amount of bismuth which had been administered was definitely known in half of the cases and in most of the others a minimum was known. All except two of the deaths were due to causes unrelated to bismuth treatment and all but one was unrelated pathologically to syphilis. Two patients died of aplastic anemia due to neoarsphenamine, neither of them having been treated by the authors. The tissue concentration of bismuth in the kidney of the fifteen patients varied from 0.5 to 10 mg. per hundred grams of tissue, in the liver from 0 to 4.5 mg., and in the brain in the two cases in which it was determined the concentration was 0.2 and 0.6 mg. respectively. In several instances large amounts of bismuth were present even though several years elapsed since its last injection. In several instances the concentration of bismuth was greater in cases in which no tissue change was present than in several in which definite lesions present were probably attributable to the bismuth. Therefore it is suggested that bismuth concentration by itself is not the only factor of importance in the production of actual tissue damage and that other factors, such as the time during which bismuth is deposited, may greatly influence the effects which a given amount of the drug may produce. It is urged that physicians make chemical studies of necropsy material from patients who have received bismuth compounds therapeutically. Studies should be made on tissues other than the abdominal viscera. Although study of the viscera is most essential when toxicity is considered, examinations of tissues of the nervous system, heart, aorta, skin, eye and others are particularly important when the concentration of bismuth in the tissues, in relation to therapeutic effect, is considered.

## American Review of Tuberculosis, New York

**40:** 487-606 (Nov.) 1939

Graphic Tracings of Respiration in Study of Pulmonary Disease. A. Cournand, D. W. Richards Jr. and R. C. Darling, New York.—p. 487.
Anomalies of Human Respiratory System: Proposed Classification. H. Jordan, Burlington, Vt.—p. 517.
Cuban National Tuberculosis Case Finding Campaign: I. Introduction and Results of Tuberculin Tests. J. R. Mencia, M. C. Kahn and E. Mayer, New York.—p. 522.
Id.: II. Results of X-Ray Studies. J. R. Mencia, E. Mayer and M. C. Kahn, New York.—p. 536.
Evolution of Modern Pneumothorax Machines: II. Fluid-Free Apparatus and Continuous Reversal Apparatus. L. R. Davidson, Staten Island, N. Y.—p. 546.
Spontaneous Pneumothorax. R. Charr, Philadelphia.—p. 565.
*Intestinal Tuberculosis and Calcium Gluconate. V. V. Pisani, Chicago.—p. 571.
Technic of Sputum Examination: Daily Studies of Sputum from Patients with Rare Tubercle Bacilli by Dilution-Flotation Procedure and Guinea Pig Inoculation. J. E. Pottenger, Monrovia, Calif.—p. 581.

**Intestinal Tuberculosis and Calcium Gluconate.**—Pisani used calcium gluconate in the treatment of forty-three cases of intestinal tuberculosis. The treatment, three weekly intramuscular injections of 10 cc. of a 10 per cent solution of calcium gluconate, extended from six to twenty-five months, with an average of thirteen months. Of the forty-three patients treated, twenty were definitely improved; that is, the major symptoms, such as nausea, vomiting, diarrhea and abdominal cramps, were unmistakably lessened in their severity if not completely absent at the time of the final check up. Minor gastrointestinal complaints, if present, were of a transitory nature. All these patients also showed an improvement in appetite, weight, strength and general appearance. The pulmonary lesions in these cases were found stationary or improved. Thirteen patients were fairly improved; that is, only an attenuation of the entire symptomatology, with appetite, weight, strength and general appearance slightly improved or unchanged, was observed. The pulmonary lesions were slowly progressive; eventually collapse therapy proved to be ineffective. Ten patients were not improved. The disease was not retarded in any way. In instituting the treatment it was fully realized that the intestine and the lungs were so extensively

involved that no known treatment could ever change the course of the disease to the fatal end. Yet these patients were treated so that the effectiveness of the treatment could be evaluated fairly. The clinical observations amply justify the further use of calcium in intestinal tuberculosis. The treatment of intestinal tuberculosis becomes doubly difficult unless the tuberculous pulmonary lesions are under control. As to the healing properties of calcium on the intestinal ulcers, extensive postmortem observations are needed before definite conclusions can be drawn. The conviction that calcium therapy may be of benefit in intestinal tuberculosis is based on the following considerations: 1. Calcium has antiphlogistic and antispasmodic properties, exerting thereby a favorable influence on the nutritional changes in the tissues. Ulceration is mainly due to such changes. 2. It restores the normal calcium ion concentration of the tissue, decreasing thereby the hydrogen ion concentration, thus creating an environment less favorable for the growth and multiplication of the tubercle bacilli. 3. It stimulates phagocytosis. 4. It stimulates fibrosis. 5. It tends to restore the normal physiology of the intestine by counterbalancing the existing vagotonia through the stimulation of the sympathetic filaments. Such a pharmacologic property alone is sufficient to place calcium as an invaluable adjunct in the treatment of intestinal tuberculosis.

## Archives of Surgery, Chicago

**39:** 901-1076 (Dec.) 1939

Surgical Aspects of Acute Abdominal Disease in Infancy and in Childhood. C. W. McLaughlin Jr. and H. H. Davis, Omaha.—p. 901.
Supernumerary Breast. T. de Cholnoky, New York.—p. 926.
Epidural Hemangioma Associated with Hemangioma of Vertebrae: Report of Case. Rolla G. Karshner, C. W. Rand and D. L. Reeves, Los Angeles.—p. 942.
*Protruded Intervertebral Disk: Report of Case: Note on Possible Inflammatory Etiologic Factor (Circumscribed Arachnoiditis). G. C. Anderson and E. Wexberg, New Orleans.—p. 952.
Studies in Cross Circulation. H. B. Shumacker Jr., A. Lamont and W. Metcalf, Baltimore.—p. 959.
Intra-Abdominal Hernia: Report of Case and Review of Literature. G. H. Hansmann and S. A. Morton, Milwaukee.—p. 973.
Hemangioma of Colon: Report of Case. C. F. Sawyer, Chicago.—p. 987.
Effects of Estrogen on Bones, Joints and Ligaments of Castrated Guinea Pigs. C. J. Sutro and L. Pomerantz, New York.—p. 992.
*Respiratory Physiologic Phenomena During Inhalation Anesthesia. E. B. Tuohy, Rochester, Minn.—p. 1001.
Intra-Abdominal Pressure: Critical Review and Experimental Study. C. R. Lam, Detroit.—p. 1006.
Appendical Stump: Its Manner of Healing in Open and in Closed Method of Treatment. I. Kross, New York.—p. 1016.
Transplanted Epiphysial Cartilage. J. D. Bisgard, Omaha.—p. 1028.
Intussusception Due to Hemangioma of Jejunum. F. T. Merchant, Montreal.—p. 1031.
Production of Experimental Tumors of Brain with Shope Rabbit Papilloma II. B. Woodhall and R. W. Graves, Durham, N. C.—p. 1041.
Seventieth Report of Progress in Orthopedic Surgery. J. G. Kuhns, S. M. Roberts, R. J. Joplin, W. A. Elliston, G. Bailey, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York, and F. E. Ilfeld, Los Angeles.—p. 1049.

**Protruded Intervertebral Disk.**—Anderson and Wexberg report a case in which protrusion of the fourth intervertebral disk, with consecutive circumscribed spinal meningitis, gave rise to symptoms simulating those of a tumor of the cauda equina. Incision of the meningitic cyst and excision of the protruding disk brought about recovery. This case and a few similar cases recorded in the literature suggest that a distinction is justified between cases of lumbar or sciatic radiculitis caused by the pressure of a protruding intervertebral disk and cases of compression of the cauda equina by a meningitic cyst which has developed from the mechanical irritation produced by the protrusion of an intervertebral disk.

**Respiration and Inhalation Anesthesia.**—Tuohy discusses some of the important features of anesthesia induced by various gases from the standpoint of preoperative medication. He believes that the dose of any drug, especially when used for premedication purposes, should be sufficient to produce a safe pharmacologic effect. As the basal metabolic rates of patients vary widely, the different drugs vary diversely in the intensity of their action. To certain patients small doses of the drug should be administered preoperatively and then repeated whenever necessary to produce the desired effect. In most instances an inhalation anesthetic should not be started until a reasonable time has been allowed for the agents given orally and hypodermically to produce their optimal effect. The mechanism of inhalation anesthesia is complex and depends on many factors, some of which are the physical laws which determine diffusion of gas and vapors and the anatomic, physiologic and chemical considerations incident to respiration. The ultimate aim in administration of any anesthetic, especially an inhalation anesthetic, is the introduction of the agent into the tissues by way of the blood stream with the least possible disturbance to normal physiologic processes. Obstruction of the air passages or depression of breathing to such an extent that an adequate exchange of gases in the lungs is not possible definitely curtails the success of the anesthetic procedure. In the absence of respiratory obstruction there are certain other factors which influence physiologically the activity of respiration. These are chiefly of two types: chemical agents and afferent nerve impulses. The respiratory signs of anesthesia are tremendously important and deserve as much consideration as any one physical sign that may be demonstrated during inhalation anesthesia. Except in certain circumstances, vasomotor and cardiovascular aberrations usually occur simultaneously with respiratory changes or inadequacies, and one should be alert to detect depressions in blood pressure, alterations in pulse rate and other signs of impending shock. In the event of respiratory and circulatory depression during inhalation anesthesia, its administration should be discontinued and the patient's lungs ventilated with oxygen, either by manual compression with the use of the breathing bag or by puncture pressure with the aid of an intratracheal tube. The practice of simultaneously administering fluids intravenously when the systolic blood pressure is falling is almost unquestioned. Such an agent as saline solution, dextrose and saline solution, solution of acacia or whole blood should be used. In many cases of impending shock with a marked degree of vasoconstriction it is not wise to administer a vasoconstrictor agent when the blood vessels are already markedly constricted. It is much more advantageous to restore the circulatory blood volume by means of intravenous administration of fluids, preferably blood, in order to ensure a medium on which the heart can work. The opportune moment for the use of vasomotor agents is when the systolic blood pressure has not fallen below 70 or 80 mm. of mercury. When vasoconstrictors are administered sufficiently early the vasomotor tone and the systolic pressure can be maintained for a reasonable time, at least long enough to permit relatively simple venipuncture. Factors other than the anesthetic which influence or hasten so-called surgical shock are hemorrhage, loss of heat, sweating, trauma to tissues and duration of the surgical procedure.

## Illinois Medical Journal, Chicago

**76:** 393-488 (Nov.) 1939

Diagnosis in Acute Pneumonias. C. N. Hamlin, Rockford.—p. 413.
General Management of Pneumonia. M. H. Barker, Chicago.—p. 416.
Serum and Drug Therapy in Pneumococcic Pneumonia. I. F. Volini, R. O. Levitt and N. L. Campione, Chicago.—p. 420.
Roentgen Rays in Management of Pneumonias. E. L. Rypins, Bloomington.—p. 424.
Pneumonia in Childhood. W. M. Whitaker, Quincy.—p. 426.
Dissemination and Control of Bacillary Dysentery. L. H. Block, Chicago; A. Tarnowski, Dixon, and B. L. Greene, Elgin.—p. 435.
Colloidal Aluminum Hydroxide "Continuous Drip" in Treatment of Large Gastric Ulcers: Therapeutic and Diagnostic Value of This Method. F. Steigmann, Chicago.—p. 443.
*Treatment of Portwine Birthmarks (Naevus Flammeus) by Grenz Rays. C. White, Chicago.—p. 449.
True Knotting of Umbilical Cord. A. T. Lundgren and W. A. Boice, Chicago.—p. 451.
*Subclinical Pellagra in the Chicago Area; Its Incidence Among Cases Admitted to a Private Sanatorium. V. L. Evans, Aurora.—p. 458.
Fibroids of Uterus: Analysis of 300 Consecutive Patients Operated on by Members of Gynecologic Staff of a Large Charity Hospital. A. E. Kanter and A. H. Klawans, Chicago.—p. 459.
Multiple Unilateral Cranial Nerve Paralyses: Report of Two Cases Due to Suppuration in Presence of Diabetes. T. T. Stone and A. J. Arieff, Chicago.—p. 465.
What Constitutes a Psychiatric Problem in General Practice. Frances Hannett and M. Gitelson, Chicago.—p. 468.
Operative Treatment of Fractures. P. B. Magnuson, Chicago.—p. 475.
Massive Hemorrhage from Episiotomy. C. Finkelstein, Chicago.—p. 482.

**Portwine Birthmarks and Grenz Rays.**—White points out that repeated treatments with the grenz rays or soft x-rays will produce a definite bleaching in so-called portwine birthmarks. Up to this time there has been no form of treatment that could be used without danger in capillary birthmarks of this type. His experience has been limited to eight cases, all of adults in whom the birthmark has been present for many

years. With treatments extending over three to nine months given every two weeks, lesions have shown marked bleaching and, in the main, results have been most satisfactory.

**Subclinical Pellagra in Chicago Area.**—Evans contends that there are many cases of subclinical pellagra which occur in other states than those of the South, and in other population groups. During 1938 a diagnosis of pellagra was made in thirteen of 205 cases at a private institution for nervous and mental diseases populated by patients from the Chicago metropolitan area. In none of these cases was the pellagra of a frank, classic type, but the prompt response of the physical symptoms (glossitis, stomatitis, weakness, irritability, insomnia, abdominal pain and so on) to nicotinic acid established the diagnosis. In all but two of the thirteen cases, pellagra was only a secondary diagnosis. These persons were suffering from mental diseases unrelated to pellagra, and although the physical symptoms of pellagra promptly responded to nicotinic acid there was no marked change in the mental condition. The other two patients appeared to have pellagra psychosis as their chief trouble and recovery was prompt after nicotinic acid was administered.

## Journal of Allergy, St. Louis

**11:** 1-108 (Nov.) 1939

Observations on Total Water and Sodium Exchanges in Asthmatic Patients. J. Sheldon, H. Howes and G. Stuart, Ann Arbor, Mich.—p. 1.
Thermolability of Ragweed Pollen Extract and Its Corresponding Reagin. C. E. Arbesman and H. Eagle, Baltimore.—p. 18.
Time Required for Production of Hay Fever by Newly Encountered Pollen, Sugar Beet. E. W. Phillips, Phoenix, Ariz.—p. 28.
Transference of Reagins in Blood Transfusions. W. P. Garver, Cleveland.—p. 32.
*Attempts to Detect Reaction Between Human Allergic Serum and Its Antigen. J. M. Newell, Philadelphia.—p. 35.
Note on Oral Potassium Chloride Therapy in Asthma, Hay Fever, Urticaria and Eczema. D. Harley, London, England.—p. 38.

**Reaction Between Human Allergic Serum and Its Antigen.**—Mixtures of a serum from a human being sensitive to rabbit hair and rabbit serum were made with these antigens, and Newell studied the mixtures by means of an air-driven ultracentrifuge and the Tiselius electrophoresis apparatus to detect evidences of physical reaction between the antibody and the antigen. No such evidence could be found under the conditions of the experiments. These negative observations support the belief that in human allergy there is no physical reaction between the antibody and its antigen in the blood.

## Journal of Nervous and Mental Disease, New York

**90:** 569-708 (Nov.) 1939

Observations on Role of Vitamin B1 in Etiology and Treatment of Korsakoff Psychosis. K. M. Bowman, R. Goodhart and N. Jolliffe, New York.—p. 569.
Role of Central Nervous System in Functional Endocrinopathies. A. O. Hecker, Woodville, Pa.—p. 576.
*Studies in Delayed Awakening in Insulin Shock Therapy (Sakel): I. Hiccups as a Sign of Impending Complications. G. W. Robinson, G. W. Robinson Jr. and Dorothy Feaster, Kansas City, Mo.—p. 590.
Hemato-Encephalic Barrier: I. Study of Clinical Aspects and Mechanism of Development of Hypertension of Cerebrospinal Fluid in Hypertensive Disease. M. M. Kessler, E. Moschcowitz and N. Savitsky, New York.—p. 594.
Further Contribution to Subject of Frontal Ataxia: III. A. Gordon, Philadelphia.—p. 614.

**Hiccups as Sign of Complications in Shock Therapy.**—According to Robinson and his co-workers, the staff of the Neurological Hospital has come to feel that hiccupping during hypoglycemic shock (Sakel) is evidence of impending complications. In more than 1,000 insulin treatments with resulting hypoglycemic reactions there were seven instances of delayed awakening, or so-called delayed shock. There have been many theories as to the possible causes of delayed awakening, but no satisfactory explanation has been given as to its actual cause. The authors feel that certain pathologic changes develop in the central nervous system which are slowly reversible or irreversible. This phenomenon is compared to changes occurring in the brain following anoxemia. Since dextrose is just as important to the life of the ganglion cell as oxygen, it is conceivable that at times the same changes occur in the brains of insulin shock patients as are found in asphyxia. It is assumed that, in delayed shock with recovery, few if any cells are lost through ischemic degeneration; nevertheless refractory delayed awakening, especially with convulsions, should be considered proof that widespread pathologic changes have occurred in the brain. This assumption is confirmed by Weil and his associates (1938). In each of their seven cases of refractory delayed awakening the authors observed that at some time during shock the patient has hiccupped a number of times. To date this has been the only consistent sign that they noticed which might indicate refractory delayed awakening. Some of their patients hiccupped without delayed shock, but they have not had a patient with these diaphragmatic spasms without some resulting difficulty. Kuntz says that hiccupping is a diaphragmatic spasm due to some reflex irritation of the phrenic nerve. Since the changes incurred during coma apparently maintain a slowly reversible state during refractory delayed awakening and are manifested by deep frequent respirations, increased pulse rate and a constant increased blood pressure level, some of these changes probably affect the medulla oblongata. This being the case, the presence of hiccups means that there is some disturbing change going on within the medulla oblongata that may take on an irreversible character if the insulin reaction is not terminated at once.

## Journal of Pediatrics, St. Louis

**15:** 613-744 (Nov.) 1939

Pneumonia in Infants and Children. B. W. Carey and T. B. Cooley, Detroit.—p. 613.
*Localized Bullous Emphysema Associated with Pneumonia in Children. B. Benjamin and A. E. Childe, Montreal.—p. 621.
*Original Method of Obtaining Sputum from Infants and Children, with Reference to Incidence of Pneumococci in Nasopharynx. W. J. Auger, Toronto.—p. 640.
*Results of Typing Pneumococci from Sputum from 450 Cases of Pneumonia Among Infants and Children. W. J. Auger, Toronto.—p. 646.
Intramuscular Administration of Antipneumococcus Serum in Infants and Children. L. Krahulik, V. Rudomanski and G. Cunningham, Brooklyn.—p. 650.
Icterus Gravis Neonatorum. R. A. Strong and H. P. Marks, New Orleans.—p. 658.
Bacteriologic Study of 100 Stillborn and Dead Newborn Infants. Alice Brim, Atlanta, Ga.—p. 680.
Potential Dangers of Tuberculin Tests. Edith M. Lincoln and W. Grethmann, New York.—p. 682.
*Climatic Factor in Precipitating Acute Tonsillitis in Children. N. D. Fabricant, Chicago.—p. 697.
Respiratory Infections: Incidence and Clinical Course as Observed in a Florida Pediatrics Practice. W. W. Quillian, Coral Gables, Fla.—p. 704.
In Vitro Effect of Pectin and Nickel Pectin on Bacterial Growth. P. S. Prickett and N. J. Miller, Evansville, Ind.—p. 710.
Unusual Case of Ephedrine Poisoning. J. H. Lapin and M. Weichsel, New York.—p. 722.
Fatal Lead Poisoning in Nursing Infant Due to Prolonged Use of Lead Nipple Shields. M. H. Bass and S. Blumenthal, New York.—p. 724.
Ritter's Disease: Review of Literature with Report of Case. N. Kendall and E. E. Aegerter, Philadelphia.—p. 733.
Leukemoid Reaction with Sulfapyridine. E. E. Moody and E. G. Knouf, Los Angeles.—p. 740.

**Localized Bullous Emphysema and Pneumonia.**—In the last six years Benjamin and Childe encountered nineteen typical instances in children in whom localized emphysematous air spaces were associated with pneumonia. In most of these there was some degree of pleurisy, which was quite often localized in the region containing the bullous emphysema. Two of the children had empyema and in two others pneumothorax developed, resulting from rupture of the pleura over the bullous emphysematous space. The typical appearance of localized bullous emphysema in the roentgenogram consists of a thin, rather sharply defined, smooth shadow, almost like a white pencil line, surrounding an air-filled space of decreased density in which lung markings are diminished or absent. Occasionally the emphysematous spaces contain a small amount of fluid and show a straight line fluid level in the upright position. They do not persist but vary in size from time to time until they disappear. The shortest period over which one was visible was seven days, and the longest period ten months. This patient is still under observation. He is entirely well clinically. It has not been possible to follow one patient, but roentgenograms of the remaining seventeen taken at intervals show eventual complete clearing. The authors believe that localized bullous emphysema associated with pneumonia is common enough to warrant a complete description in all volumes dealing with the diagnosis of diseases of the lung in infants and children. The term "cyst" or "cystic" should not be applied to this condition. In contrast, true congenital pulmonary air cyst is rarely encountered. The differential diagnosis between bullous emphysema and lung

abscess, localized pneumothorax, congenital pulmonary air cyst and diaphragmatic hernia is not difficult if the course of the case can be followed for a short time. No treatment is necessary unless complicating conditions ensue.

**Obtaining Sputum from Children.**—Auger devised a method of obtaining sputum from infants and children which obviates the difficulties of other procedures. The method consists of aspirating sputum from the throat while the child coughs. The apparatus, when assembled, consists of a catheter to enter the child's throat, a glass tube connection for the observation of the sputum, a valve to permit alternate suction and escape of air from the syringe and an ordinary 50 cc. syringe to provide the suction. During the past year sputum from the 450 patients with pneumonia admitted to the wards of the Hospital for Sick Children has been examined by the suction method. Pneumococci were present in 83.3 per cent of the sputums. The most common types were I, II, XIX, XIV and XVIII in children more than 2 years of age and types XIX, XIV and untypable pneumococci in children less than 2 years of age. Empyema developed in 20 per cent of the patients with early type I pneumonia who received no specific treatment, in 16 per cent given serum therapy and in only 8 per cent treated with sulfapyridine. The mortality rate was extremely high for infants less than 1 year of age, especially when the pneumonia was due either to the pneumococcus plus another pathogen or to an organism other than the pneumococcus. Staphylococcus aureus was the cause of death of 58.3 per cent of the infants less than 1 year of age when the pneumonia was due to an organism other than the pneumococcus.

**Climate and Tonsillitis.**—Fabricant discusses the climatic factor as a precipitating cause of severe tonsillitis. He presents nineteen cases of acute tonsillitis in children ranging in age from 1 to 10 years. Each child was sufficiently ill to warrant hospitalization, and the onset of the cold front precipitated the disease in each instance. Although scores of patients with acute tonsillitis were seen, only these nineteen were regarded as sufficiently ill to require hospitalization. For purposes of simplificatcn in this study the author regards the high and low range of the daily temperature as an adequate index of meteorologic change. The cold front, a sudden fall in air temperature, is usually associated with the passage of a polar air mass. This brings with it not only a change in temperature but lessened humidity and an increase in barometric pressur'. The precipitation of disease takes place in the wake of a cold front. At such a time there is a change in the functional status of the mucous membranes of the nose and throat. A latent period or "lag" of a few hours to one or more days may occur before clinical symptoms are observed. Although one cold front may be passed without incurring harm, the superimposed cold front often results in damage, especially when the second insult, striking the individual before adequate recovery has been possible, may contribute to further biologic instability. The infall of cold air is pathogenic either directly because of the meteorologically induced vascular spasm or indirectly because of changes following in the wake of the vascular spasm.

## New England Journal of Medicine, Boston

**221:** 801-844 (Nov. 23) 1939

Radiotherapy for Inflammatory Conditions. A. U. Desjardins, Rochester, Minn.—p. 801.
*Sulfanilamide in Treatment of Erysipelas. L. A. Rantz and C. S. Keefer, Boston.—p. 809.
Suppression of Urine Complicating Pyelography. W. C. Quinby and G. Austen Jr., Boston.—p. 814.
Neurosyphilis and Its Treatment. H. H. Merritt, Boston.—p. 817.
Diseases of Thyroid Gland. J. H. Means, Boston.—p. 820.

**Sulfanilamide in Erysipelas.**—Rantz and Keefer studied without special selection all patients admitted to the male wards of the Boston City Hospital with a diagnosis of facial erysipelas from October 1937 to June 1939, forty-two in all. As a control, they viewed the records of forty-three similar patients admitted during 1936 and 1937 before the use of sulfanilamide was instituted. All received a standard therapy consisting of bed rest, fluids, sedatives and cold magnesium sulfate compresses on the affected areas. Those to whom sulfanilamide was administered received as a routine 6 or 8 Gm. by mouth in the first twenty-four hours, with a maintenance dose of from 3 to 5 Gm. a day thereafter. As criteria for the evaluation of the effect of the drug, the authors considered the duration of fever, the incidence of complications and the mortality. If the time of institution of the sulfanilamide therapy is considered in relation to the onset of the disease, it is found that of twenty-one patients treated on or before the third day of illness the total febrile course averaged 5.2 days, with an average of 3.0 days after beginning the drug. In cases in which the drug was given after the third day, fever persisted for an average of 9.1 days and subsided in an average of 4.2 days after the onset of medication. The total duration of fever was therefore markedly shortened of patients treated on or before the third day of the illness. It has little effect after this interval. This is to be expected, because by the fourth day usually the local lesions are fully developed and relief by the natural mechanisms of the body must be awaited. Complications occur frequently in the treated cases, but less often in those treated early. Recurrences and relapses occur among the treated cases as often as among the untreated group.

## New Jersey Medical Society Journal, Trenton

**36:** 633-694 (Nov.) 1939

X-Ray Localization of Intra-Ocular Foreign Bodies from Point of View of the Ophthalmologist. A. R. Sherman, Newark.—p. 637.
Surgery of Rectum and Colon. B. B. Ranson Jr., East Orange.—p. 640.
Recent Advances in Study of Pneumonia. R. A. Kilduffe, Atlantic City. —p. 646.
Is Respiratory Infection an Etiologic Factor in Bronchial Asthma? H. L. Rogers, Riverton.—p. 650.
Acute Suppurative Mediastinitis: Report of Case. H. A. Brodkin, Newark.—p. 653.
Tibial Bone Graft for Clavicular Defect: Report of Case. H. Briggs, Orange.—p. 655.
Constitutional Inadequacy. W. C. Alvarez, Rochester, Minn.—p. 658.

## New York State Journal of Medicine, New York

**39:** 2081-2154 (Nov. 15) 1939

Ureteral Calculi: Review of 350 Cases. C. C. Higgins, Cleveland.—p. 2085.
Clinical Application of Studies in Resuscitation. W. Branower, New York.—p. 2094.
The Problem of the Schizophrenic and Effects of Newer Forms of Treatment. B. Pollack, Rochester.—p. 2100.
Some Unusual Conditions Met by the Otologist. J. D. Carroll, Troy.—p. 2110.
Surgical Treatment of Chronic Arthritis. S. Selig, New York.—p. 2114.
Present Status of Arthroplasty. F. H. Albee, New York, and Venice, Fla.—p. 2118.
Use of Synovectomy in Chronic Arthritis. P. P. Swett, Hartford, Conn. —p. 2125.
Arthrodesis in Charcot's Knees. J. C. McCauley Jr., New York.—p. 2132.

## Northwest Medicine, Seattle

**38:** 409-454 (Nov.) 1939

Obscure Brain Tumors and Functional Psychoses: Hazards in Their Differentiation. M. M. Campbell and K. E. Hynes, Sedro-Woolley, Wash.—p. 412.
Bronchoscopy: General Considerations. P. Bailey, Portland, Ore.—p. 416.
Peritoneoscopy: Advance in Intra-Abdominal Diagnosis. P. E. Spangler, Portland, Ore.—p. 418.
Diseases of Accessible Oral Mucosa and Circumoral Areas. C. J. White, Chicago.—p. 421.
Unusual Appendix. J. V. Barrow, Los Angeles.—p. 424.
Choice of Cesarean Section in Infected Patients. P. R. Rollins, Seattle. —p. 427.
Amebiasis: Study of Cases in Upper Willamette Valley. E. D. Furrer, Eugene, Ore.—p. 429.

## Ohio State Medical Journal, Columbus

**35:** 1153-1264 (Nov.) 1939

Preoperative and Postoperative Care. E. C. Cutler, Boston.—p. 1169.
Review of 141 Consecutive Cases of Massive Hemorrhage from Upper Gastrointestinal Tract. E. N. Collins and R. S. Knowlton, Cleveland.—p. 1175.
Congenital Heart Disease. F. C. Clifford, Toledo.—p. 1181.
Differential Diagnosis of Cough. G. L. King, Alliance.—p. 1183.
Advising the Public. C. A. Wilzbach, Cincinnati.—p. 1190.
Objective Assessment of the Allergic Child. S. Cohen, New Orleans.—p. 1193.
*Bulgarian Belladonna Treatment of Postencephalitic Parkinsonian Syndrome. H. D. Fabing, Cincinnati.—p. 1195.
Time of Fertility and Sterility During Human Menstrual Cycle. T. T. Zuck, Cleveland.—p. 1200.
Sulfanilamide and the Negro. M. A. Schnitker, Toledo.—p. 1204.
Rocky Mountain Spotted Fever in Ohio: Report of Case. N. Shapiro and W. F. Ashe, Cincinnati.—p. 1206.
Insulin as Substitute for Tube Feeding. J. Smith, Sebring.—p. 1210.

**Bulgarian Belladonna for Postencephalitic Parkinsonism.**—Fabing gave fourteen patients, totally incapacitated by parkinsonism, a wine extract of Bulgarian belladonna. No other medications were employed during the course of observations, which extended from May 15, 1938, to May 1, 1939. It was

necessary to decrease the dosage after building it up to the point at which side reactions occurred. During the year nine other patients have been observed for a period exceeding six months. The results were impressive but not as good as those reported by a few other workers. The subjective state of all patients was improved. Symptoms most improved were those of rigidity, salivation and postural disturbances. Palpebral spasms were markedly improved in two instances and completely relieved in a third. The two patients having oculogyric crises were totally relieved. Nine patients were markedly improved, seven moderately, six slightly and one not at all. Improvement began to occur anywhere from the third to seventh day after medication was begun. In all cases the greatest gain seemed to occur within the first two or three weeks, after which time the rate of improvement decreased rapidly. The dosage finally tolerated varied through a remarkably wide range of from 8 to 48 Gm. twice daily. Toxic reactions were primarily a dizziness or light headedness (usually described as a drunken feeling in the head), dryness of the mouth and passages of the upper respiratory tract, drowsiness and occasionally nausea and vomiting. Transient confusion and hallucinosis occurred occasionally. One patient died of a typical heat stroke. Postmortem examination was not permitted. It is conceivable that the belladonna alkaloids may have impaired his sweat mechanism and thus predisposed him to heat stroke. There appears to be no necessity to confine the medication to administration twice daily, as has been suggested. It seems that many patients can tolerate the drug better if it is given in smaller doses at more frequent intervals. No dietary restrictions seem necessary, but all patients report that alcoholic drinks cannot be tolerated with the drug. Hard lemon-flavored candy drops have proved best in the author's experience in combating dryness of the mouth. It is impossible to state which patients will respond best to the treatment, but it is generally those less than 40 years of age, those whose symptoms have been present but a few years, those with marked rigidity and little tremor and those who can tolerate large quantities of the drug. Those with unilateral involvement usually do well also. Mental symptoms which occasionally accompany the parkinsonian syndrome respond variously to the drug. One young man with severe anxiety states but mild parkinsonism has been completely relieved, whereas a girl with impulsive behavior continues to be a problem to her family.

## Pennsylvania Medical Journal, Harrisburg

**43:** 113-208 (Nov.) 1939

Clinical Significance of Prothrombin as Factor in Hemorrhage. A. J. Quick, Milwaukee.—p. 125.
Management of Acute Abdominal Condition. R. L. Schaeffer, Allentown.—p. 131.
Vaginal versus Abdominal Hysterectomy. L. Averett, Philadelphia.—p. 136.
Chyle Ascites and Other Disturbances of Chyle System. N. P. Davis, Pittsburgh.—p. 142.
Fractures in Region of Ankle Joint. W. D. Griesemer, Reading.—p. 145.
Factors Influencing Results in Varicose Vein Therapy. E. F. McLaughlin, Philadelphia.—p. 150.
Value of Osteoplastic Flaps in Cleft Palate Repair. W. B. Davis, Philadelphia.—p. 153.

## Public Health Reports, Washington, D. C.

**54:** 1965-2004 (Nov. 3) 1939

Disabling Morbidity and Mortality Among White and Negro Male Employees in the Slaughter and Meat Packing Industry, 1930-1934, Inclusive. H. P. Brinton.—p. 1965.
Presence of Histamine in Platelets of Rabbit. L. Zon, E. T. Ceder and Catherine W. Crigler.—p. 1978.
Susceptibility of Five Inbred Strains of Mice to Liver Changes Induced by Subcutaneous Injection of 2-Amino-5-Azotoluene. H. B. Andervont.—p. 1986.

**54:** 2005-2034 (Nov. 10) 1939

Studies on Oxyuriasis: XIV. Controlled Tests with Various Methods of Therapy. W. H. Wright, F. J. Brady and J. Bozicevich.—p. 2005.
Significance of Excretion of Lead in Urine. L. T. Fairhall and R. R. Sayers.—p. 2016.
Siphonaptera: Notes on Synonymy of North American Species of Genus Hoplopsyllus Baker. G. M. Kohls.—p. 2019.
Id.: List of Alaskan Fleas. W. L. Jellison and G. M. Kohls.—p. 2020.

**54:** 2035-2076 (Nov. 17) 1939

Nursing Accomplishments as Revealed by Case Records. M. Derryberry.—p. 2035.
Histopathologic Changes in Mice Inoculated with Influenza Virus. A. A. Nelson and J. W. Oliphant.—p. 2044.

## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## Archives of Disease in Childhood, London

**14:** 1-88 (March) 1939

Observations on Descent of Testicle, with Special Reference to Spontaneous Descent at Puberty. R. E. Smith.—p. 1.
Cardiomegalia Glycogenica Circumscripta. S. van Creveld and H. M. van der Linde.—p. 14.
Transient Lung Consolidation in Asthmatic Children, with Reference to Eosinophilia. B. Söderling.—p. 22.
*Relationship Between Acute Rheumatism and Streptococcus Antifibrinolysin. C. B. Perry.—p. 32.
Statistical Note on Gastrointestinal Disorders in Infants. M. D. Baber.—p. 40.
Apple Treatment of Infantile Diarrhea. W. Sheldon and Marcia Hall.—p. 43.
*Vitamin-Resistant Rickets. A. M. Gill.—p. 50.

**Acute Rheumatism and Streptococcus Antifibrinolysin.**—To determine the relation of the development of antifibrinolysin to the onset of acute rheumatism, Perry studied the antifibrinolysin content of the blood of seventy-five children during acute attacks of rheumatism, during convalescence and following hemolytic streptococcus infections of the upper respiratory tract. Fifty-seven acute episodes were observed in forty-four cases of acute rheumatism and carditis. Thirty-three of these forty-four patients showed resistance to fibrinolysin during the acute stage. In ten antifibrinolysin was present in two attacks and in the two with three attacks antifibrinolysin was present in all. One patient seen early and right through one attack showed no resistance to fibrinolysin, yet in a subsequent attack this was well marked but lasted less than a month. Thus in fifty-seven attacks of rheumatism antifibrinolysin was present in forty-five. No obvious difference could be detected in those who showed antifibrinolysin and those in whom this was absent. Thus of these forty-four cases 78 per cent showed resistance to fibrinolysin in the acute phase of the disease. This is similar to the 75 per cent of normal people developing antifibrinolysin following uncomplicated streptococcic infection, giving strong presumptive evidence that attacks of acute rheumatism are preceded, in the majority of cases, by a hemolytic streptococcus infection even if this is unrecognized. However, it is clear that the development of antifibrinolysin is not an essential part of the rheumatic process even in the same child. Of six patients with chorea but no carditis only one showed antifibrinolysin at the onset of the chorea, and this lasted for less than a month. Fourteen children with chronic but quiescent rheumatic heart disease and one with chorea of long standing were suffering from hemolytic streptococcus sore throat while under observation. They had no definite recurrence of rheumatic infection, but five of the fourteen patients with carditis showed a rise in the sleeping pulse rate which lasted from seven to twenty-one days and which occurred from fourteen days to two months after the sore throat. Of the fifteen cases in only two did antifibrinolysin follow the attack. In thirteen no resistance to fibrinolysin developed. In three of these resistance had been well marked in the antecedent attack of rheumatism, as was also the case of the child with chorea. These fifteen patients received acetylsalicylic acid for six weeks following the sore throat in an attempt to prevent a relapse of rheumatism. Of ten children with carditis who were observed during a quiescent period and who had a hemolytic streptococcus sore throat followed by a rheumatic relapse, resistance to antifibrinolysin developed in six at the same time as the attack of rheumatism. This was severe in all six and also fatal in two. The four who failed to show antifibrinolysin had a mild rheumatic relapse. These four patients received acetylsalicylic acid, whereas only two of the six patients in whom antifibrinolysin appeared were given it. These observations are at variance with Stuart-Harris's observation that resistance to fibrinolysin develops with marked frequency in rheumatic children following a streptococcic sore throat. Schlesinger (1937) suggested that the administration of salicylates to rheumatic children following a hemolytic streptococcus sore throat tends to prevent relapses. Whether this view is correct or not, the present study indicates that it does tend to inhibit antifibrinolysin formation. This possible action of the salicylates in inhibiting antibody formation merits further investigation.

**Vitamin-Resistant Rickets.**—Gill reports four cases of rickets (three of a mother [healed] and her two child daughters) in none of which was there any evidence of malnutrition, lack of sunlight, calcium drain or celiac or renal disease and in none of which did any of the known forms of therapy (ultraviolet radiation, vitamin D and calcium gluconate) given over a period of several years produce evidence of healing. In this type of case, healing occurs spontaneously when growth ceases. It is suggested that the fault may be a failure of utilization at the site of osseous growth.

## British Journal of Children's Diseases, London

**36:** 251-334 (Oct.-Dec.) 1939

Observations on 1,136 Cases of Enlarged Tonsils and Adenoids. C. Rolleston.—p. 251.
Von Gierke's Disease. F. R. B. Atkinson.—p. 261.
Congenital Abnormalities of Gallbladder and Extrahepatic Ducts: Review of 245 Reported Cases with Reports of Thirty-One Unpublished Cases. E. Stolkind.—p. 295.

## British Medical Journal, London

**2:** 1029-1072 (Nov. 25) 1939

*Classification of Noninfective Enlargement of Lymph Nodes. Joan M. Ross.—p. 1029.
Value of Therapeutic Measures in Duodenal Ulceration. J. Ronald. —p. 1033.
Estimation of Blood Sugar by the Practitioner: Modification of Folin and Wu's Method. H. R. Millar.—p. 1035.
*Serologic Groups and Types of Streptococci Isolated from Excised Tonsils. E. V. Keogh, I. Macdonald, Joan Battle, R. T. Simmons and S. Williams.—p. 1036.
Retropulsion of Nucleus Pulposus: Critical Review. S. Pappworth. —p. 1038.

**Noninfective Enlargement of Lymph Nodes.**—Ross states that the noninfective enlargements of the lymph nodes are essentially hyperplasias or neoplasms of the reticulum or its derivative cells. The term "reticulosis" should be used for those diseases in which there is systematized hyperplasia of differentiated or undifferentiated mesenchymal cells leading to generalized enlargement of the lymph nodes, the spleen and the liver, with alteration of the bone marrow. The recently acquired knowledge of the existence of the undifferentiated mesenchymal cell and its capacity for differentiation aids in classification. The unknown factor stimulating hyperplasia of any cell elements does not necessarily inhibit differentiation of that cell, although it may determine the line of differentiation which the hyperplastic cell may follow. The classification proposed assumes that any one of the unknown etiologic factors will act on medulla or follicle or sinus, since action at such sites has been established for the known etiologic agents producing changes in the lymphatic glands (syphilis and the like). In medullary reticulosis the proliferating cells arise in the medulla of the lymph gland, spleen and bone marrow. In follicular reticulosis the follicles of the lymph gland are affected and the proliferating cells have a follicular arrangement. In sinus reticulosis hyperplasia affects the littoral cells lining the lymphatic sinuses of the lymph glands and the venous sinuses of the liver, spleen and bone marrow. Subdivisions can then be made in these groups according to the types of cells produced. Primary neoplasms, such as reticulosarcomas, are also a cause of noninfective enlargements of the lymph nodes. The object of the author's classification is to assist in the search for an etiologic factor and to provide a basis for information as to prognosis and the result of treatment.

**Types of Streptococci from Excised Tonsils.**—Keogh and his collaborators isolated hemolytic streptococci from 259 of 378 pairs of tonsils (68.5 per cent) removed at operation. The strains belonged to the following Lancefield groups: group A, 189 (50 per cent); group B, twenty-one (5.5 per cent); group C, thirty-three (8.7 per cent); group G, twenty-eight (7.4 per cent). In twelve cases two different strains were present. This incidence of group A strains in the removed tonsils is ten times higher than that isolated from throat swabs of healthy children and adults, which was 4.5 per cent for group A and 13.1 per cent for the other groups. The preponderance of pathogenic strains of hemolytic streptococci (group A) in removed tonsils seems to support the clinical indications for tonsillectomy. It can be argued that, given time, the natural resistance of the children would have succeeded in eliminating the streptococci; but, in the three instances in which there is certain evidence of the date of the original infection, the cocci were still present in large numbers at operation from four to five months later. In the rest of the series from four to eight weeks usually elapsed between the recommendation for operation and its performance, and in most cases symptoms had been present for weeks or months before operation was advised; therefore the presumption is that if these symptoms were due to streptococcic infection of the tonsils spontaneous cure had not occurred. Chronic streptococcus carriers must menace the health of other children. The authors know of instances in which such carriers have caused cases of scarlet fever. The authors do not wish the foregoing to be construed as a panegyric on routine tonsillectomy.

## Journal of Pathology and Bacteriology, Edinburgh

**49:** 457-608 (Nov.) 1939

Characters and Systematic Position of Morgan's Bacillus. A. Sevin and R. Buttiaux.—p. 457.
Desiccation of Filtrable Tumors and Other Biologic Materials. R. Knox. —p. 467.
Early Stages of Apical Scar Development. J. Davson.—p. 483.
Structure and Mode of Growth of Bacterial Colonies Morphologically Intermediate Between R and S. Forms. K. A. Bisset.—p. 491.
Immunologic Experiments with Highly Concentrated Suspensions of Rous I Tumor-Producing Agent. C. R. Amies and J. G. Carr. —p. 497.
*Pathogenicity of Bacterium Alkalescens. D. Nabarro and D. G. f. Edward.—p. 515.
Toxicity of Indene. G. R. Cameron and Cecile R. Doniger.—p. 529.
Nonsaccharolytic Plectridial Anaerobes. J. D. MacLennan.—p. 535.
Effect of Blood Digest and Haem on Growth of Corynebacterium Diphtheriae. V. Glass.—p. 549.
Toxin of Bacillus Parapertussis and Relationship of This Organism to Haemophilus Pertussis and Brucella Bronchiseptica. I. E. Bruckner and D. G. Evans.—p. 563.

**Pathogenicity of Bacterium Alkalescens.**—From the literature Nabarro and Edward collected evidence which makes them believe that Bacterium alkalescens is pathogenic for man. Seventeen cases are recorded in which Bacterium alkalescens has been isolated from the feces. In these it was associated with disease, nearly always involving the intestinal tract. The series includes one example of case to case infection in a ward, thus demonstrating the infectivity of the organism. They conclude that Bacterium alkalescens can produce a mild form of acute dysentery or a chronic colitis. The infection is thus primarily intestinal and lesions produced elsewhere are to be regarded as complications such as are known to follow Flexner dysentery. Specific agglutinins of significant titer were produced in many cases. Bacterium alkalescens shares certain antigens with other dysentery organisms. The authors suggest that symptomless carriers of the organism occur relatively more often than after Flexner dysentery. This may explain why complications due to a secondary invasion of the urinary tract or blood stream, for example, are relatively more common.

## Lancet, London

**2:** 1107-1156 (Nov. 25) 1939

Treatment of Burns and Scalds in Children. W. M. Dennison.—p. 1107.
*Hereditary Familial Purpura Simplex. E. Davis.—p. 1110.
Vinesthene Anesthesia in General Practice. J. Elam.—p. 1115.
Congenital Duodenal Diverticulum. W. E. Tanner and T. H. C. Benians. —p. 1117.
Renal Calculi Following Alkali Therapy. T. Moore.—p. 1118.

**Hereditary Familial Purpura Simplex.**—Davis observed eleven families, which included several members, mostly females, who showed spontaneous ecchymoses. In eight families purpura occurred in successive generations, and in three families in sisters of the same generation only. Of the families described the author examined twenty-five purpuric members. The capillary resistance test was positive in sixteen and negative in nine. The test was also positive in four nonpurpuric members of these families. Platelet counts, bleeding time, coagulation time, blood fibrinogen and clot retraction were normal where tested. Other tendencies to abnormal bleeding or bruising were not often present and were rarely severe; but one female subject with purpura simplex died of a chronic nephritis associated with widespread hemorrhages. One family also showed hereditary telangiectasis. Ecchymoses first appeared in five families about the time of the climacteric, and they came on at earlier ages in the next generation in seven families. The ecchymoses were frequently associated with rheumatoid arthritis and rheumatic fever. Thus purpuric members gave a history of rheumatic fever in four families and of rheumatoid arthritis in five other families. Nonpurpuric relations had had rheumatic fever in

five families and rheumatoid arthritis in one family. The author believes that there is a relation between purpura, rheumatic fever and rheumatoid arthritis. Familial purpura is clearly not the hereditary hemorrhagic thrombasthenia of Glanzmann (1918), subsequently called hereditary pseudohemophilia (Schlicke and Hall 1938), because typical features, such as severe bruising from slight trauma, recurrent visceral hemorrhages and prolonged bleeding time, were absent. There was a history of epistaxis in three families, menorrhagia in three, and both epistaxis and menorrhagia in one family, but these bleedings were not often severe. The author regards the condition he described as a familial hereditary purpura simplex seen mostly in female subjects. He saw it in eleven families in twelve months; but medical advice was not sought and patients were not always aware that other relations were affected. The disorder seems the most benign form of hereditary hemorrhagic diathesis. The association of hereditary telangiectasis with hereditary purpura in one family is striking. The author wonders whether the association is fortuitous or whether there is a link between them.

## Medical Journal of Australia, Sydney

**2:** 747-780 (Nov. 18) 1939

Experimental Variation of Urea Content of Blood. E. B. Drevermann. —p. 747.
*Pink Disease Treated by Vitamin $B_1$. G. Forsyth.—p. 751.
Traumatic Backache. N. Little.—p. 755.

**2:** 781-818 (Nov. 25) 1939

Germs and Generals. F. K. Norris.—p. 781.
The Polycythemias. R. Jeremy.—p. 786.
Gastroscopy: Some Observations and Case Reports. J. E. Sherwood. —p. 791.

**Vitamin $B_1$ for Pink Disease.**—Since certain features of pink disease in children show a resemblance to beriberi and pellagra (notably polyneuritis, changes in temperament, digestive disturbances, cutaneous rashes, muscle hypotonia, edema and vascular disturbances in the extremities) Forsyth used vitamin B, in doses larger than those usually prescribed, for the treatment of four children with this disease. The results were encouraging. Improvement seemed to occur after the daily oral use of from 180 to 600 units of vitamin $B_1$. In three of them the therapeutic agent used also contained appreciable quantities of the other factors of the vitamin B complex. The disorder of the other patient treated only with vitamin $B_1$ was of the nature of a mild recurrence with predominating polyneuritic element; on general principles one would expect this to respond to vitamin $B_1$. It is possible that pink disease is really a deficiency disease and that the substance or substances lacking may be part or the whole of the vitamin B complex. The cases presented seem to support this contention. On the other hand, it may be due to a virus infection with the brunt of the infection falling on the peripheral nervous system. Lack of vitamin B may be one of the factors which render the peripheral nervous system more prone to attack by the virus. In any case, treatment by vitamin $B_1$ could be expected to reduce the symptoms by virtue of its action in reducing polyneuritis. The author does not think that his cases prove or disprove the deficiency or the virus theory of the causation of the disease; for this reason he thinks that the various factors of the vitamin B complex, including nicotinic acid, are deserving of further clinical trial in pink disease.

## South African Medical Journal, Cape Town

**13:** 693-712 (Oct. 14) 1939

National Health Insurance: I. Survey of National Health Insurance Schemes. A. M. Moll.—p. 695.
Id.: II. Point of View of the General Practitioner. C. P. Bligh-Wall.—p. 698.
Id.: III. Administrative Point of View. L. J. Hatch.—p. 702.

**13:** 713-734 (Oct. 28) 1939

Whither Anesthesia? R. M. Muir.—p. 715.
Porphyrinuria and Polyneuritis: Case. F. H. Kooy.—p. 720.
Fitness and Disability. D. C. Watt.—p. 722.

## Tubercle, London

**21:** 1-40 (Oct.) 1939

Diagnosis of Pulmonary Tuberculosis Without Bacteriologic Confirmation: Clinical Aspects. J. G. Scadding.—p. 1.
Id.: Administrative Difficulties. I. Davies.—p. 13.
Researches on Types of Tuberculosis Bacilli in Skin Tuberculosis and Especially in Lupus Vulgaris. J. Kamienski.—p. 17.

## Journal Belge de Neurol. et de Psychiat., Brussels

**39:** 647-714 (Oct.) 1939

Meningioma of the Olfactory Nerve. J. Helsmoortel Jr. and H. J. Scherer.—p. 647.
Rhythmic Myoclonias of Velum and Larynx. J. Radermecker and J. Helsmoortel Jr.—p. 654.
Hereditary Cerebellar Ataxia of Pierre Marie. V. Gallemaerts, F. Kleyntjens and W. Cloetens.—p. 667.
*Effect of Deinsulinized Pancreatic Extract on Epilepsy. C. Rouvroy. —p. 676.
Paranoia and Homosexuality. J. de Busscher.—p. 691.

**Effect of Deinsulinized Pancreatic Extract on Epilepsy.** —Rouvroy investigated the effect of deinsulipized pancreatic extract on the various manifestations of essential epilepsy and in particular on minor epilepsy following convulsive attacks. The author investigated five such cases. They demonstrate the favorable effect of deinsulinized pancreatic extract: (1) reduction of the duration of minor epilepsy, (2) alleviation of secondary phenomena such as excitation, agitation, hallucination and refusal of food, and (3) hypersomnia, distinctly longer than that following attacks of major epilepsy or the status, with retention of the motory reactions to exterior stimuli. The author points out that deinsulinized pancreatic extract, referred to as angioxyl, worked in cases in which other powerful therapeutic agents such as phenobarbital failed. Deinsulinized pancreatic extract was also used in a limited number of cases of major epilepsy. In isolated attacks angioxyl was found to have a retarding effect, but the attacks that followed became aggravated. The author succeeded in shortening the duration of intermittent attacks in two instances.

## Journal de Radiologie et d'Électrologie, Paris

**23:** 385-432 (Sept.) 1939. Partial Index

*Treatment of Whooping Cough by Ultraviolet Rays: Results and Mode of Action. P. Delthil and G. Peuteuil.—p. 385.
Indications for Roentgen Therapy of Inflammatory Gynecologic Disorders. R. Mathey-Cornat.—p. 390.
Infantile Vertebral Osteochondritis (Vertebra Plata of Calvé). P. Passebois and P. Bétoulières.—p. 397.
Anti-Inflammatory Roentgen Therapy. J. Huguet and G. Daniel.—p. 401.
Roentgen Rays in Inflammatory Disorders. B. Mayer.—p. 403.
Examination of Mucosa of Large Intestine. R. Ledoux-Lebard and J. Garcia-Calderon.—p. 413.

**Ultraviolet Rays in Whooping Cough.** — Delthil and Peuteuil point out that the multiplicity of methods which have been recommended for the treatment of whooping cough indicates that none of them insure constant successes. On the other hand, it has been recognized that the patient's general condition is of great importance for the prognosis of whooping cough. Consequently, attempts have been made to increase the defenses of the organism. Some investigators, among them Bru and d'Agen, have recommended the use of ultraviolet rays in cases of whooping cough. However, in spite of the good results obtained by them and by others, this therapeutic method apparently has received little attention. The authors describe their own experiences with this method and their investigations on its mode of action. They found that the attacks of coughing diminished rapidly in number and intensity after the second or third irradiation. The attacks of vomiting, which appear to the families as the most distressing of the symptoms, are influenced even more effectively by the ultraviolet rays. Sometimes the vomiting is arrested before the cough has improved. The disappearance of the attacks of vomiting permits better nutrition, and the diminution of the cough favors sleep. Thus the emaciation is arrested. This is especially important in nurslings, for it is well known that the young organism has only slight resistance to accentuated or prolonged denutrition. The authors further stress that, by reducing the cough and by acting on the general condition, the ultraviolet rays reduce the complications. It being extremely difficult to estimate the end of whooping cough, some investigators, who recognize the favorable effect of ultraviolet rays on the cough and the vomiting, do not admit that the evolution of the disease is modified by these rays. Nevertheless the authors cite cases in which the course of the whooping cough could be considered as shortened by the action of the ultraviolet rays. The rays exert their action by different mechanisms. The modifications of the blood are constant; not only are the formed elements changed but the phosphorus and calcium contents are noticeably increased. The nervous system is favorably influenced and a regulating influence is exerted on

the respiratory and cardiac rhythms. The endocrine and visceral organs react to the rays by way of the peripheral terminations of the sympathetic. Finally the actinotherapy constitutes a veritable shock therapy, which is revealed by fever, agitation with insomnia, temporary leukopenia and hypotension. The erythema and the actinic pigmentation indicate hormonal modifications; there is no erythema without signs of biologic shock. These phenomena have been explained by sudden changes in the serum albumins. The authors assume that the calming effect on the nervous system, the regulating effect on the neurosympathetic tonus or the reestablishment of normal calcemia and phosphatemia have an essential part. They do not recommend the actinotherapy for the onset of the disease but think that the irradiations should be begun between the tenth and fifteenth days. The ray should be applied in such a manner that erythema and pigmentation are produced as quickly as possible. The distance from the source of light is at first 90 cm., and at the second or third session it may be reduced to 75 cm. To test the cutaneous sensitivity of the patient, the authors begin by applying the rays one minute to each side of the body. If no erythema results, the time is extended to three and then to six minutes. If a mild erythema is produced, augmentation is done gradually to avoid a too violent reaction; for instance, the irradiation is extended to seven or eight minutes. After shock, erythema and fever have been produced, the subsequent exposures can be of equal length. The number of irradiations varies between four and twelve.

## Fortschritte a. d. Gebiete der Röntgenstrahlen, Leipzig

**60:** 253-322 (Oct.) 1939. Partial Index

Symptoms of Fatigue (Necrosis and Pseudarthrosis) of Carpal Scaphoid Bone Caused by Chronic Trauma (Pneumatic Tools). R. Andreesen. p. 253.
Metastases in Genital Carcinoma of Women, with Special Consideration of Bone Metastases. H. Dörr.—p. 263.
Avulsion Fracture of Mastoid Process. E. Wörner.—p. 273.
Extra-Articular Bone Changes in Primary Chronic Polyarthritis. K. Weiss.—p. 280.
Diagnosis of "White Bile." J. Berg.—p. 284.
*Nature of Circumscribed Areas of Rarefaction in Neck of Femur During Perthes' Disease. W. Müller and W. Loepp.—p. 294.

**Rarefaction in Neck of Femur During Perthes' Disease.**—Müller and Loepp direct attention to the fact that in typical cases of Perthes' disease (osteochondritis deformans juvenilis) peculiar spotlike rarefactions are occasionally observed in the neck of the femur. Their studies on the involvement of the neck of the femur in Perthes' disease were made at the orthopedic clinic of the University of Königsberg. Disregarding uncharacteristic changes in the form of simple atrophy, spotted atrophy and indistinct structure, they observed typical rarefaction on the neck of the femur only in those patients in whom Perthes' disease appeared at a relatively early age, at any rate before the fifth year of age. The fact that Perthes' disease may develop in relatively young children, that is, in the third or fourth year of life, has recently been pointed out by Gickler, and the authors were able to corroborate this early appearance in their own material, in that they observed four cases in which the typical picture of Perthes' disease existed already during the fourth year of life. They observed that the changes on the neck of the femur develop only during a certain stage of the epiphysial disturbance and it is especially this temporary course which is important for the estimation. They describe two typical cases and illustrate the reports with roentgenograms. In summarizing their observations on the areas of rarefaction they say that in cases of Perthes' disease, particularly in those of a relatively early age and also in analogous diseases for instance of the heel, there develop in the immediate vicinity of the cartilaginous symphysis, and at first connected with it, circumscribed rarefactions in the atrophic bone tissue of the neck of the femur, which correspond to the cartilaginous invasions of the vertical column known as Schmorl's cartilaginous nodules. They believe that, like Schmorl's vertebral cartilaginous nodules, the areas of rarefaction in the neck of the femur represent invasions of cartilaginous substance into the atrophic spongiosa, which, like the former, later have a densified osseous wall in their edges. As a result of the more intense growth of the neck of the femur, the cartilaginous invasions gradually move deeper into the neck of the femur and lose their connection with the cartilaginous symphysis. Later they disappear completely; apparently they are replaced by osseous tissue. Thus the cartilaginous invasions are only temporary changes, and in view of this fact they cannot be regarded as the cause of Perthes' disease or of analogous changes in other bones but rather must be considered as a secondary process. The knowledge that the rarefactions are analogous to Schmorl's nodules is important, because it will prevent their being mistaken for inflammatory processes.

## Klinische Wochenschrift, Berlin

**18:** 1357-1380 (Oct. 21) 1939. Partial Index

Pharmacologic Modification of Sympathetic Centers. H. T. A. Haas.—p. 1357.
Relations Between Vitamin $B_2$ (Riboflavin) and Thyroid. H. Wahl.—p. 1363.
*Significance of Iron Content of Serum for Estimation of Leukemia. R. Stodtmeister and P. Büchmann.—p. 1365.
Myasthenia Gravis, Especially Its Relation to Thyroid. K. Tsuji.—p. 1366.
Simple Method for Quantitative Determination of Cocarboxylase in Blood and Tissues According to Thiochrom Method. K. Ritsert.—p. 1370.

**Iron Content of Serum in Leukemia.**—According to Stodtmeister and Büchmann an extremely high leukocyte count in leukemia does not necessarily indicate an unfavorable general condition, although the therapeutic procedure is often based on the leukocyte count. The authors ascribe greater importance to the general condition and particularly to the behavior of the temperature. Patients with leukemia who require treatment often have subfebrile temperatures which impair the general condition and which disappear in the course of treatment. The presence of a large splenic tumor likewise indicates the necessity of energetic treatment. The differential blood count is of greater importance than is the absolute number of leukocytes. A predominance of young and immature elements makes the prognosis unfavorable. In view of the great importance which iron has for the general cellular metabolism, the authors studied the iron content of the serum in four cases of chronic myeloid leukemia and in one case of lymphatic leukemia. They found that the iron content of the serum is a reliable indicator of the general condition. In view of the considerable fluctuations that occur in the iron content, a single determination is insufficient. The authors controlled their leukemic patients for several weeks. They found that, with progressive deterioration of the general condition, the iron content of the serum decreases. However, the level of the iron content does not go parallel with the hemoglobin content and the leukocyte count. If in the course of roentgen therapy there is an improvement in the general condition, the iron content increases noticeably. If the iron values remain low there is usually no improvement. A deficiency of iron also finally affects the erythropoiesis and the result is a secondary anemia. Thus the anemias which develop in the course of chronic leukemia are due to iron deficiency.

## Monatsschrift für Kinderheilkunde, Berlin

**80:** 1-136 (Sept. 20) 1939

Pathogenesis of Exudative Eczematoids. H. Hüllstrung.—p. 1.
Treatment and Curative Possibilities of Sepsis During Childhood. A. Fykow.—p. 42.
Simmonds' Disease During Childhood. J. Geldrich.—p. 103.
Use of Aminophylline in Treatment of Diphtheric Myocarditis. F. Biskupski.—p. 121.
Esophageal Atresia and Esophagotracheal Fistula. J. C. Schippers.—p. 131.
*Is There a Connection Between Fat Content of Breast Milk and Length of Intervals Between Nursing? U. S. Ružičić and Z. Popović.—p. 135.

**Fat Content of Breast Milk and Intervals Between Nursing.**—Ružičić and Popović say that in previous experimental studies they found that the food intake of a lactating woman greatly influences the fat content of her milk. Other investigators, however, have cited other factors as influencing the fat content of breast milk. The authors were especially interested in Marfan's assertion that the fat content of breast milk is dependent on the intervals elapsing between the breast feedings. In order to verify this contention the authors made investigations on ten wetnurses. During the first two days of observation the milk was expressed from the breasts at hourly intervals; during the following two days the intervals were extended to two hours and then for two days each to three, four, five and six hours. A table which records the fat content of the

different specimens of milk reveals that there are individual differences, which the authors think were to be expected in view of individual differences in diet. The fat content of the milk specimens has no connection with the length of the intervals between nursings. However, the tables seem to indicate that a connection exists between the nursing intervals and the daily quantity of milk but the total daily quantity of fat is not influenced by it. The authors are now conducting investigations on this problem. In the summary they stress once more that the length of intervals between nursings is without influence on the fat content of milk.

## Wiener klinische Wochenschrift, Vienna

**52:** 929-948 (Oct. 13) 1939

Significance and Interdependence of Metabolic and Digestive Disturbances in Patients with Circulatory Disorders. O. von Zimmermann.—p. 929.
*Modification of Hyperthyroidism by Magnesium Glutaminate. E. F. Hueber.—p. 932.
Epinephrine Therapy of Bronchial Asthma. O. Raupenstrauch.—p. 933.
Treatment of Cystitis. W. Brandesky.—p. 934.

**Magnesium Glutaminate in Hyperthyroidism.**—Hueber says that earlier he and Lehr demonstrated that magnesium compounds have a regulating action on the heart in experimentally produced cardiac arrhythmias. At that time they suggested as a possible explanation of this action of magnesium that some investigators had succeeded in reducing the cellular respiration in the frog heart by means of magnesium, that others had observed that magnesium reduces the metabolism in rabbits, and so on. These observations induced the author to investigate the action of magnesium in conditions of pathologically increased metabolism such as hyperthyroidism. He gave injections of magnesium glutaminate to six patients with hyperthyroidism. The basal metabolism was measured with a standard apparatus on the day the patients were admitted to the hospital and again after from five to seven days of rest in bed and injections of an indifferent substance such as distilled water. At the end of this period of rest, only those who still had a greatly increased basal metabolism were subjected to three daily injections of 10 cc. of a 10 to 20 per cent solution of magnesium glutaminate. The intramuscular injections were tolerated without irritation; the intravenous injections produced a disagreeable feeling of heat similar to that which is observed in injections of calcium; however, when made slowly the intravenous injection was tolerated without harmful effects. After three days of medication with magnesium glutaminate the basal metabolism was determined again and it was found that increases of from 25 to 60 per cent had been reduced, so that now the values were only from 7 to 13 per cent above normal. Moreover, the patients felt relieved and objective symptoms such as tachycardia were lessened. The reduction in the basal metabolism and the improvement persisted in most cases or a renewed increase could be suppressed by treatment with magnesium glutaminate. The problem of how the magnesium glutaminate acts on the increased metabolism is being investigated by means of animal experiments.

## Zeitschrift für klinische Medizin, Berlin

**136:** 577-714 (Sept. 21) 1939. Partial Index

Blastomycosis and Central Nervous System. O. Stochdorph.—p. 577.
*Influence of Spleen on Carbohydrate Metabolism in Constitutional Hemolytic Anemias. A. Herzog.—p. 610.
Surface Tension of Serum and Its Constituents in Higher Dilutions. C. J. Keller and O. Künzel.—p. 631.
Deformation of Electrocardiogram by Action Current of Abnormal Transmission Fibers in Bipolar and Unipolar Derivation. H.-W. Wünsche.—p. 639.
Resorption of Calcium Following Intracutaneous Administration Under Various Experimental Conditions. G. Hetényi and F. Herman.—p. 650.
Blood Sugar and Blood Ketone Bodies of Diabetic Patients During Fasting and Their Evaluation in Total Metabolism. C. Dienst.—p. 659.
Blood Sugar and Gastric Function in Their Reciprocal Relations. W. Thiele.—p. 664.

**Spleen and Carbohydrate Metabolism.**—Herzog says that the realization that galactose is assimilated almost exclusively in the liver led to the use of this monosaccharid in tests of the hepatic function. However, the reliability of this test has been challenged repeatedly and it has been pointed out that various endocrine glands, such as the thyroid and the pancreas, exert an influence on the assimilation of galactose. The author reviews the literature on the connection between the pancreatic function and the assimilation of galactose. He reports two cases which suggest that insulin promotes the tolerance for galactose. The cases are of interest from the point of view not only of the carbohydrate metabolism but also of the blood-forming tissues. Studies on the blood and on the carbohydrate metabolism are described in detail. The patients had hemolytic anemia. One of the cases was noteworthy for therapeutic sensitivity toward iron and in both cases the hemolytic anemia was accompanied by leukopenia. Both of the patients showed hyperassimilation of galactose. In the oral administration, from 60 to 70 Gm. of galactose was tolerated and the intravenous administration of 40 Gm. of galactose resulted in only slight elimination; furthermore, in the course of a dextrose tolerance test low hypoglycemic values in the after-fluctuation of the blood sugar curve indicated increased activity of the insular apparatus. The author discusses the connections between assimilation of galactose and the action of the insular apparatus. He shows that in cases of spontaneous hypoglycemia there may occur agalactosuria as the manifestation of an increased insular action. He further shows that an influence of the spleen on the carbohydrate metabolism may have a part in the hyperassimilation of galactose. Observations on the reported cases, particularly on one of them, make it appear possible that hyperfunctioning of the spleen may be the cause of a negative galactose test in the presence of a parenchymal disorder of the liver. Moreover, the author suggests that some of the "failures" of the galactose test in parenchymatous hepatic diseases which have been reported in the literature may likewise have been the result of splenic hyperfunction.

## Zeitschrift für Tuberkulose, Leipzig

**83:** 1-64 (Sept.) 1939

Is Positive Tuberculin Reaction a Sign of Immunity Against Tuberculosis? O. Ljung.—p. 1.
*Influence of Weather on Patients with Tuberculosis. A. Schuberth and R. Gruner.—p. 12.
Influence of Bioclimate and Weather on Reticulocyte Content of Blood in Patients with Pulmonary Tuberculosis. H. Grebe.—p. 23.
Percentage of Positive Results Obtainable by Fluorescence Microscopy in Specimens from Tuberculous Patients. H. Gärtner.—p. 27.
Apparatus for Warming Laryngoscope. E. Dorn.—p. 31.

**Influence of Weather on Tuberculosis.**—Schuberth and Gruner show that persons with a hypersensitive sympathetic nervous system are especially suitable for the study of the effects of weather, because they are sensitive to changes in weather. Referring to studies by Hellpach, the authors differentiate between persons with weather "feeling" and persons who are sensitive to the weather. The latter are designated as A types and the former as B types. In the persons who are sensitive to meteorological changes (A types) the irritability involves local processes such as scars of all types, amputation stumps, inflamed bursae and diseased joints. The persons with weather "feeling" (B types), however, are characterized by a lability of the entire sympathetic nervous symptom. The weather symptoms of these persons with weather feeling can be differentiated into central and peripheral symptoms. To the central symptoms belong lassitude, exhaustion, irritability, depression, anxiety and insomnia; to the peripheral symptoms, disturbances in the organs with sympathetic innervation (polyuria, nausea, diarrhea or constipation, palpitation of the heart, spasms of various types and increased capillary permeability). Tuberculosis is usually accompanied by hypersensitivity of the sympathetic nervous system and for this reason tuberculous patients are especially susceptible to meteorological changes. Tuberculous patients with weather "feeling" are usually also sensitive to the weather, for they all have scars (pulmonary, pleural and often surgical scars). Moreover, the sensory stimulation threshold is changed as the result of the effect of the tuberculous toxin and this frequently results in true neurasthenia. The B types among the tuberculous patients usually feel meteorological changes sooner (premonitory sensations) and more intensively than do the A types. The disturbances and signs of sympathetic irritation may differ greatly. That certain types of weather elicit always only certain symptoms could not be corroborated; however, there is a predominance of some symptoms and disturbances in the course of certain atmospheric processes. The effect of a weather front is the greater, the longer is the time that has elapsed since the passage of the previous front and the greater is the difference between the invading air masses and those that occupied the same region before. The harmful effects of such fronts on the

tuberculous patients should be weakened by special care and the administration of medicaments before the passage of the front. This of course requires collaboration between the physician and the meteorological observatories.

## Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

**83:** 5129-5236 (Oct. 28) 1939. Partial Index

Unguis Incarnatus. M. N. Roegholt.—p. 5130.
*Iontophoresis in Treatment of Keloids, Dupuytren's Contracture and Scleroderma. M. Nijkerk.—p. 5135.
Poliomyelitis on the Basis of Observations in General Practice. N. A. Bolt.—p. 5141.
Dielectrolysis in Its Application in General Practice. L. Coenen.—p. 5152.

**Iontophoresis in Keloids, Dupuytren's Contracture and Scleroderma.**—Nijkerk employed iontophoresis in four cases of keloid, two of Dupuytren's contracture and seven of scleroderma. The negative electrode was saturated with a 1 per cent solution of potassium iodide and was placed on the diseased area. The negative electrode exerts a sclerolytic effect. In the patients with keloids the current strength was usually 2 milliamperes; each application lasted from ten to forty-five minutes and the total number of applications varied between 104 and 208. This number was given over periods of from one year to two years and nine months. In the cases of scleroderma the treatment was continued for from five months to one year and eight months, the individual session lasting from five minutes to one hour; the current strength was from 1 to 4 milliamperes. In the cases of Dupuytren's contracture the current strength was 2 milliamperes; the individual treatment did not last longer than thirty minutes, and the total number was twenty-four and 117 respectively. Four of the thirteen patients, that is, one with keloid, one with Dupuytren's contracture and two with scleroderma, were cured; the others were improved. As the iontophoresis must be continued for a long time it should be applied only after the more simple treatments have failed. The electric current should not be raised too high because it may produce hyperemia, edema, necrosis and ulceration.

**83:** 5237-5332 (Nov. 4) 1939. Partial Index

Syphilis of Aorta. C. L. de Jongh.—p. 5243.
*Thoracoplasty with Intrathoracic Placement of Scapula. J. B. Kosters.—p. 5250.
Partial Upper Thoracoplasty in Pulmonary Tuberculosis. C. Oudenaarden.—p. 5259.
Determination of Vitamin C in Healthy Persons and in Patients with Chronic Polyarthritis, Scurvy and Leukemia. G. A. K. von dem Borne.—p. 5265.

**Thoracoplasty with Intrathoracic Placement of Scapula.**—Kosters observed comparatively slight reactions after the resection of the three upper ribs but severe reactions following interventions on the lower ribs. He thinks that this is due to the fact that the upper ribs are only slightly involved in the respiratory movements and that the weakening of the upper wall which is produced by the removal of the upper ribs is largely corrected by the wide upper side of the scapula. He found that in suitable cases the scapula could be luxated inward over the edge of the ribs and after having been placed inside the thoracic wall, into a space prepared for it, it acted as a filling and produced a collapse of an extent which otherwise would have required the resection of three more ribs. Before reviewing three cases in which he employed the intrathoracic placement of the scapula, he points out that several days after he had employed this procedure for the third time Maurer, of Davos, described a similar procedure with intrathoracic placement of the scapula. The three histories reported here indicate that from three to five ribs were removed. The author emphasizes that with this method surgical shock and deformity are less than with the more extensive thoracoplasties.

## Nordisk Medicin, Helsingfors

**4:** 3179-3236 (Oct. 28) 1939. Partial Index

### Hospitalstidende

Roentgen Diagnosis of Meniscus Lesions in Knee. C. E. Prip Buus.—p. 3185.
*Riedel's Goiter. P. Brændstrup.—p. 3189.

**Riedel's Goiter.**—Brændstrup states that of the seven cases of Riedel's thyroiditis treated at the Finsen Institute since 1932 only one presented unusual features. The patient was a girl aged 18 in whom symptoms of a typical exophthalmic goiter set in two years earlier. Her condition improved somewhat under treatment with iodine but she was unable to work. The thyroid gland showed diffuse enlargement and was as hard as iron; the general condition, metabolism and pulse pointed to myxedema, although the metabolism became normal on discontinuation of the iodine. Strumectomy was done, partly because of suspected malignity. Microscopic examination revealed the characteristic changes of Riedel's fibrous goiter. The question is, the author says, whether there was originally an exophthalmic goiter with later fibrous changes and development of clinical myxedematous features or whether it was from the start a Hashimoto's struma with transition into extensive Riedel's fibrosis, which would agree with the changing pathanatomic picture. He has found no case in the literature in which the disorder was characterized by true symptoms of exophthalmic goiter in the beginning, although signs of milder hyperthyroidism are seen. Postoperatively there has been a slight aggravation of the myxedema and the patient must be kept under observation.

## Finska Läkaresällskapets Handlingar

Treatment of Pyarthrosis of Knee According to Willem. L. J. Lindström.—p. 3193.
Lengthening of Electrocardiographic Ventricular Systole (Distance QT). H. Törnroth.—p. 3197.
*Ruptures of Aorta. R. Gordin.—p. 3201.
Case of Avitaminosis B. Ruth Wegelius.—p. 3208.
Treatment of Gastrointestinal Infections with Ammonium Mandelate. G. Sternberg.—p. 3210.
*Acute Disseminated Encephalomyelitis and Its Eventual Connection with Postinfectious and Postvaccinal Nervous Complications. F. Möller.—p. 3215.
"Bronchography with Air" in Cases with Changes in Larger Bronchi in Pulmonary Tuberculosis: Two Cases. H. Dahlstedt.—p. 3224.
Complete Arrhythmia and Its Treatment with Quinidine (Vaquez). O. Ohlin.—p. 3226.

**Ruptures of Aorta.**—In 654 necropsies from Maria Hospital in Helsingfors there were eight cases of rupture of the aorta (four arteriosclerotic, three syphilitic and one of idiopathic medionecrosis of the aorta) and in 1921 necropsies from the Pathologic-Anatomic Institute five cases (two arteriosclerotic, one syphilitic, two of unknown etiology). Gordin says that, although reports of 500 cases of rupture of the aorta have been published, only twelve of these were diagnosed during life. Recovery has occurred in a number of cases of rupture of the aorta, especially those which form a dissecting aneurysm, and the cases have been accidentally found at a later necropsy. Clinical diagnosis should be made in order to improve the patient's chance of recovery even though the prognosis is poor and the therapeutic possibilities are slight. Sufficiently long and complete rest are most important in treatment.

**Acute Disseminated Encephalomyelitis.**—Möller says that especially in 1938 numerous cases of nonpurulent inflammation of the central nervous system occurred in Ångermanland in Sweden, forty-eight of which were treated at the Military Hospital in Sollefteå and are of interest etiologically, clinically and epidemiologically. While about half of the cases treated were in connection with various infectious diseases (mumps, measles, smallpox, whooping cough and zoster) and vaccination against smallpox, the others seemed to appear spontaneously. About half of the cases presented types of meningo-encephalitis, encephalitis or encephalomyelitis; the remaining were classified as meningitis, poliomyelitis or neuritis. All but one of the pure meningitides originated in connection with infectious diseases and vaccination. Both poliomyelitis and parotitis were widespread in the region. An increase in the number of cases of poliomyelitis occurred during February and March, which is remarkable considering the season and compared with the figures from Sweden generally. There were cases of encephalitic and of poliomyelitic type in the same village at about the same time. The occurrence of nervous complications connected with different infectious diseases and vaccination against smallpox with the simultaneous occurrence of acute inflammations in the central nervous system without evident relation to such infectious diseases supports the theory of the power of a generally spread neurotropic virus which prepares the way for a postinfectious or a postvaccinal encephalitis.

# THE STUDENT SECTION

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# Trends, Good and Bad, in Medical Education

THE ARTHUR DEAN BEVAN LECTURE


DAVID CHEEVER, M.D.

BOSTON


To be invited to give the Bevan Lecture before the Chicago Surgical Society is—for me at least—to feel two emotions: pleasure that the privilege should have been accorded me, and misgivings lest I have nothing to offer suitable for the occasion. It seems probable that my selection may be related to my interest in medical education, which may be inferred from the fact that I have been a teacher in the Harvard Medical School since 1903. Accordingly my subject is "Trends, Good and Bad, in Medical Education."

The life record—happily still far from complete—of the generous founder of this lectureship, Arthur Dean Bevan, suggests that the subject at least will be of interest to him. Dr. Bevan is a great physician-citizen of wide interests, embracing the practice of surgery, clinical investigation and teaching, but it is in the latter field or, more broadly, in the promotion of medical education that he is preeminent. He has taught the allied subjects of anatomy and surgery at Rush since 1888, and as chairman of the Council on Medical Education and Hospitals of the American Medical Association from its creation in 1904 until 1928 he was a potent influence in the reform of medical education accomplished by the Association, the Carnegie Foundation for the Advancement of Teaching, the Association of American Medical Colleges and the various state boards of licensure, working together: a reform which resulted in the closing of one half of the medical schools of the United States, the strengthening of others, the encouragement of university affiliations and the cutting in half of the medical student enrolment. No man in our profession has more consistently and ably battled for its elevation through raising the standards, professional and personal, of its members.

It seems an act of supererogation as extreme as the classic example of such things, the bringing of coals to Newcastle, to bring to Chicago a discussion of medical education—Chicago, the home of four schools of high rank, of numerous hospitals, of national bodies representing organized medicine and many of its specialties, and especially of a medical fraternity whose leaders rank with the best in the world, old or new. To bring to Chicago a discussion of this subject may well seem superfluous. Yet precisely for these reasons a sympathetic and intelligent hearing is assured.


Read before the Chicago Surgical Society, Oct. 6, 1939.


### EPOCHS IN MEDICAL EDUCATION

This is not the place, and it would be unnecessary to rehearse however briefly the story of medical education in the United States, but I may remind you of its three characteristic epochs: first, the period of apprenticeship, when young men attached themselves to busy practitioners, followed and assisted in their daily work, studied in their libraries and started to practice either without a degree or with authority conferred perhaps by the local medical society or possibly by a college; second, the period of private or proprietary medical schools relying for their financial support largely or often solely on the fees received from students and therefore dependent on their good will, with all that that implies, and usually unable to meet the vastly increased expenses due to the new laboratory branches; third, the period in which we now happily live, when the marasmic schools have suffered a merciful extinction and there remain those which for the most part share the educational and financial support of universities or, if private, are sufficiently endowed to deserve and win high rating. Salutary and remarkable as the evolution has been, I feel that Mr. Abraham Flexner, in the masterly report of the Carnegie Institution for the Advancement of Teaching which was such a factor in securing the reforms of twenty-five years ago, did scant justice to many of the physicians and teachers of the earlier epochs. He had a thesis to prove and a moral to point and he justly excoriated the many mercenary proprietary schools which shamelessly bid for

students, misrepresented their laboratory and clinical advantages, and purveyed a miserably inadequate education on a mercenary basis. He might have described, without weakening his argument, the many high minded men who, attracted to medicine in the first instance by its opportunities for altruistic service and for scientific investigation, performed laborious and self-sacrificing work as teachers without the expectation of more than nominal monetary compensation, to the end that worthy successors might be trained to carry on the profession which they loved. These heroes of a previous epoch, so slightingly referred to by some modern educators, did the best they could with what the times had to offer for their help. We physicians are by nature perfectionists. Billroth, writing in 1874 of the teaching of clinical subjects in the German universities, described its perfection and said "We torture ourselves in the endless stirring for constant improvement." Indeed is it not characteristic that, sixty-five years later, this audience of busy physicians should be listening to the same subject?

### THE RAW MATERIAL

Let us consider first the raw material—the young men [1] who are to study medicine: Who shall they be and what shall be their preparation? Boys of sound character, good brains and good health, it goes without saying. Such boys are naturally attracted to a profession which offers remarkable opportunity for helpful service and for scientific investigation—characteristics which should be of chief influence in the choice. What of the material rewards as an attraction? The ambition to earn a good living, to support a family in comfort and to find happiness in the privileges which pertain to easy circumstances is a normal and praiseworthy one, but no greater mistake can a young man make than to pursue medicine as a career chiefly for the living which it may afford. He is pretty sure to rue his choice, for the long and arduous preparation and the exacting practice make the average modest income but a poor reward for such an ambition. The inability to command in some way sufficient resources to free the student from serious financial worries during the six to ten years of his purely professional preparation should deter any but the youth endowed with good health, unusual ability and high enthusiasm from entering on the career. The attempt actually to earn his living during the years in a first-rate medical school is only too likely to result in physical exhaustion, poor grades and disappointment. Such a statement is not intended to dissuade the unusual boy from making the essay; for him there are scholarships and loan funds and opportunities for earning in vacations, and perhaps help from relatives or friends who are willing to risk a wager on his personality. Certainly in this country, where individual initiative and free enterprise have usually or at least until most recent times received their just rewards, the poor boy should not be estopped from any proper ambition; but unfortunately the appellation "poor boy" often connotes a miserable background of general culture, inadequate premedical study and handicaps of health and personality which give little promise for a useful career in medicine. I may be wrong, but I seem to perceive in our country in recent decades a tendency for some young men to seek the career solely for the sake of the money and the social respectability or prestige attaching to it. It seems peculiar, perhaps, to speak of the latter in this democratic country. In Europe, where for centuries society has been organized on a caste system (there are alleged exceptions now!) and where enlistment for the defense of the various fatherlands and for public service built up a spurious aristocracy, physicians have usually ranked rather low in the social scale. Perhaps the descent from the medical charlatans and barber-surgeons of the Middle Ages left its impression on the public mind. In America, however, in Colonial times the minister, doctor, lawyer and teacher formed the nucleus of the cultured and distinguished citizens of the community and neither wealth nor politics nor military service has supplanted them. There is no doubt that the level of the physician in the social order attracts some men for whom the opportunity for service and for scientific study have but little meaning. Billroth, in his "Lehren und Lernen," paints a ghastly picture of the inundation of medical school and hospital in Vienna by hordes of poor and ill prepared boys, seeking to secure the social hallmark of the physician, and says "In all my experience I found scarcely one genius among a thousand poor students." Vienna in 1870 and America in 1939 may perhaps scarcely be compared, yet there is just enough resemblance to give pause to the observer of the contemporary medical scene.

### PREMEDICAL REQUIREMENTS

What shall be required as a preparation for studying medicine is a question for which there can scarcely be an authoritative answer; all that can be done is to sketch the minimal and optimal requirements and give an opinion as to their wisdom. A broad consideration of the problem is needed, looking especially to the question as to whether the same basic training should be required of all medical students without regard to the type of practice they are to pursue or whether it is to be varied in type and mitigated in severity of requirements by the supposed necessities of their future career. It is fairly certain, for instance, that the neurologic

1. And, of course, the young women.

surgeon will utilize in his practice quite different parts of his educational capital than the dermatologist. Some schools, as is well known, convinced of a special need in the community and perhaps influenced by their own particular educational equipment, advertise and try to furnish a course especially suited to general practitioners. Not referring to these schools, but pursuing the same idea of varying the course to meet conditions, it has been proposed that a shorter, less severe and less expensive training be provided for those who anticipate practicing under conditions which cannot justify in a material sense the huge capital investment of time and money. I am sure that you will agree with me that any relaxation of the minimal requirements believed to be necessary for the adequate primary education of a physician should not be considered with the object of meeting the average needs of the average community. These requirements at the present time consist of two years of college work, which include a full course each in inorganic and organic chemistry, physics and biology, a reading knowledge of French and German and, naturally, facility in the use of English. Any time remaining may be spent as the student desires. A few schools, of course, pitch their requirements higher. I have always felt that a few favored schools should require the full four years college course or at least urge it on their matriculants, as is in fact done.

### PRESIDENT CONANT'S VIEWS

The premedical education still furnishes food for thought and discussion, as it has for a hundred years, in one particular aspect the essence of which is the proper proportion between the premedical sciences and the humanities, and the total content of both. President Conant, of Harvard, in a recent address before the Congress on Medical Education and Licensure discussed this subject and referred to the result of a questionnaire sent to medical educators and eminent practitioners which showed the widest divergence of opinion, ranging from the recommendation that a student spend most of his time in college with the humanities and social sciences with the exclusion of science, to the exact opposite. Mr. Conant believes that in many instances an excess of premedical science courses are taken by the student in order to impress favorably the committees on admission and fears that the latter may be susceptible to such an influence despite sincere protestations and resolutions to the contrary. He proposes an interesting plan by which prospective medical students shall be identified and tentatively approved at the end of their freshman year on the basis of their school and college record to that date and shall forthwith be guided as to their program by appropriate members of the college and medical faculties, due provision being made for the desirable man who makes up his mind late. I confess that my own feeling about the premedical course has changed. Formerly I advocated the straight four year college course as a requirement and deprecated all but a minimum of the physical and natural sciences, on the ground that never again would the student, after his plunge into the most exacting of professions, be able to expose himself very satisfactorily to the general culture which contributes so much to happiness and distinction. But two factors made me change my mind: first, the extreme length of the preparation—from six to ten years after entering the school—which violates all economic and natural laws concerning the time when a young man may consider himself a full fledged unit in society; second, the tremendous increase in the part played by physics, chemistry and biology as a foundation for medicine. Regretfully I feel that two years of college work devoted almost wholly to premedical sciences must be accepted as the standard for most of our schools. If only our boys could enter college at 16 instead of 19, which is the average age at our great universities, I believe that part of the problem would be less acute. I know of no way in which this could be brought about except by gradual evolution and at the sacrifice of some alleged advantages afforded by college education at a later age. European boys, we are told, are two years ahead of ours in education. Whether this has any bearing or not, a survey of the contemporary scene in Europe and in America gives me pause in recommending a change. Regretfully also I feel that the physical sciences and to a less extent biology now play such an essential part in the foundation of the medical sciences that a more than elementary knowledge is important. Although the courses in the medical schools are supposed to be pitched at a level appropriate to the preparatory work, the necessities of the subject, the ambition of the teacher and the presence of some students who have pursued courses more advanced than their fellows result in the conduct of the courses at a level above that for which most of the class are prepared, but not higher, be it understood, than is advantageous for a man who aspires to have a firm grasp of the medical sciences.

### A RARE FEAT FOR A MAN

My feeling is that the student in a two year premedical course must have the normal four courses in inorganic and organic chemistry, physics and biology, must acquire a reading knowledge of French and German, and should have at least an elementary knowledge of Latin and Greek, which are the tongues of those who cradled science and philosophy, on which is based medical terminology. Is there any time left for studies looking toward a wider culture?

The student who can afford a four year course may pursue one of two plans: If he has discovered a taste for pure science he should grasp every opportunity to lay a broad and deep foundation to support the research in medical sciences which will later be his main object; if his interests seem prophetic of a taste for the practical application of medical science to human problems, he may well devote himself to the broader cultural interests of the humanities and social sciences. It is, I believe, a rather rare feat for a man whose tardily awakened interest in what may be called laboratory science lays bare inadequate knowledge of the underlying subjects, especially chemistry and physics, to retrace his steps and build the missing foundation. On the other hand, the cultivation of general cultural tastes outside science may be a fruitful avocation for the physician with a scholarly and humanistic type of mind, throughout his life.

### THE CURRICULUM

The curriculum of the medical school is far too technical and complicated a problem to be discussed here. There is general agreement, of course, in the wisdom of placing the preclinical laboratory branches in the first two years, of beginning the clinical work either in the second half of the second year or at the beginning of the third year, and of teaching the minor specialties toward the end of the course. Each school has worked out the details with due regard to its own peculiar conditions. At the Harvard Medical School the concentration system for gross anatomy, histology and embryology, physiology and biologic chemistry under which these subjects are studied intensively for four months each during the first year and then dropped from further formal consideration with the exception of elective courses during the fourth year and voluntary work during free time is thought to offer advantages. The obvious and chief disadvantage is that with the end of the course the student tends to relegate the subject to the category of finite and finished things, to forget it and to fail to keep it mentally available for his clinical experience. Two things may effectively counteract this: Clinical teachers should have the knowledge and breadth of view to permeate their teaching with the relevant application of these preclinical subjects, and all tests, especially the final general examination for the degree in medicine, should be designed to prove the student's knowledge in all branches, thus encouraging him constantly to review and refresh his previously acquired knowledge.

One innovation which we have introduced at the Harvard Medical School has been so apparently successful that I venture to speak of it in some detail. This concerns the introduction of students during their preclinical work to the actual problems of patients in order to illustrate the importance and application of the laboratory work on which they are engaged. This has been done especially in gross anatomy, during the first four months of the first year. On Saturday mornings, which is "free time," the class is invited to the Peter Bent Brigham Hospital, where a senior member of the surgical staff shows any patients available in the hospital who exhibit lesions and problems relating to the anatomic structures which the students have been dissecting during the previous week. The nature and natural history of the lesion are explained in simple terms, together with the principles of treatment, all with especial reference to the importance and application of the anatomic structures and relations involved. A skeleton, blackboard drawings, wall charts and specimens are at hand for illustration. If an operation is indicated, it is now performed before the students. I hasten to say that I am not one of those who believe that operations performed before an amphitheater of students are ordinarily useful for instruction, but granted that the audience is of first year men, that the operation lends itself to somewhat long range observation and that the surgeon is an enthusiastic teacher who can demonstrate and discuss what he is doing without jeopardizing the asepsis or interfering with his work, it is remarkable how much can be seen, heard and understood by the student. Let me offer an example:

### INSTRUCTION IN THE OPERATING ROOM

The students have finished the dissection of the pectoral region and are engaged in the axilla. A patient is shown on whom may be demonstrated the normal breast and its topographic relations; then another with the retracted nipple, orange peel skin, local tumor and perhaps axillary nodes of malignant disease of the mammary gland. The anatomic pathologic reasons for these changes are pointed out and perhaps three or four students from the front rows are allowed to palpate the tumor, after due warning by precept and example of the necessity for extreme gentleness (the danger of harmful trauma in this is not a fraction of that to which the patient has daily subjected herself in her ablutions and cosmetic manipulations. The theory of the spread of malignant disease by contiguous growth, permeation and lymph or blood stream invasion is explained, and the corresponding principles of removal by block dissections. Discussion is encouraged about what anatomic structures may be sacrificed in the name of thoroughness without too serious sacrifice of function. The patient is then operated on; it is shown how the skin incision can be planned to give adequate approach without impairing subsequent motion, the pectoral

muscles are demonstrated, the structures passing through the costocoracoid membrane including the anterior thoracic nerves, section of which the students are told to watch closely so that they may see the twitching of the muscles; the neurovascular bundle is isolated, retracted and perhaps some of its components quickly noted; the axilla is cleared, the lateral thoracic sensory nerves are divided and the posterior thoracic and thoracodorsal motor nerves are meticulously preserved. Practically all of these structures can, with a little trouble, be visually demonstrated to the majority of seventy-five or a hundred students in a suitable operating room. During intervals of the operation, or while anesthetist or assistants are busy, attention may be drawn to operating room manners and customs and to the ritual of asepsis, and reference may be made to Pasteur, Lister or Morton. At a subsequent exercise, usually on the next Saturday, the patient is shown again and relation made of the postoperative course, giving the student a new impression of the relative innocuousness of most carefully conducted operations. The result of such an exercise is that the student returns to the anatomic laboratory with a vivid idea of the significance and importance of what he is doing, which impels him to review the dissection already made and to push ahead with a degree of interest which is a great help in grasping anatomic facts and principles. The anticipation of some of the preliminary elementary teaching of later clinical years does no harm. Our experience has been that almost the entire first year class (with dwindling of numbers as examinations or other interests loom) attends these purely voluntary, time consuming exercises, for which no credit is given. The same principle is being tried less extensively in connection with neurology, physiology and embryology; obviously surgery offers the richest opportunity for correlation with anatomy. The course which I have outlined is never closed without the most emphatic and apparently sincere testimony from the students of the pleasure and profit which it has afforded them. Is not the judgment of the majority of mature students about their teaching important evidence of its value?

Another innovation has been the creation of "free time" for the students. In spite of the pressing demands by the crowding subjects of the curriculum, the afternoons of Tuesday and Thursday and the whole of Saturday have not been assigned and constitute free periods which each student may employ as he thinks best. Short voluntary courses are offered in special phases of major subjects or opportunity is provided to investigate some problem in which the student has discovered a particular interest; or the time may be spent in the library. No academic credit is given for these pursuits, and the student need give no accounting of his time. It is believed that this lessening of the rigidity of the curriculum encourages the development of initiative and imagination and the capacity for self education, on which so much stress is justly laid.

### SKILL IN TEACHING

Why not dismiss this division of our subject by the statement that a teacher of medicine should be a paragon of the mind and heart? There is no human virtue which would not adorn this most essential of the professions; but let us be realists and discuss one or two practical problems as to who shall teach our medical students, introducing the subject by saying that it has long been my conviction that far too little attention is paid and too little value attached to skill in the art of pedagogy. Too often the teacher of medicine is one not by conviction but because he controls clinical material. Too often he may be a medical scientist who suffers the boredom of teaching because his tenure of an academic post is conditioned on his discharging both functions. Be the clinical material ever so rich, be the research ever so significant, each will fail in realizing its full value for medical students unless it is communicated and interpreted by a good teacher. I am not speaking, of course, of the disciples who, singly or in groups, may attach themselves to a chief and absorb, as it were by osmosis, some of the essence of his work; I refer to the classes of average medical students who must be taught, or helped to learn to teach themselves, the science and art of medicine. In our more fortunate schools, part of the problem has been solved by their actual control of hospitals and clinics or of teaching services therein, usually under the egis of a university, so that clinical teachers may be sought anywhere and appointed to discharge both functions. But I am convinced that far too little importance is attached to skill in teaching. For years I have listened to the deliberations of appointing bodies and have been struck by the emphasis on almost every other qualification. I recall the discussion about the eligibility of an eminent laboratory scientist to head a preclinical department; his qualifications seemed beyond question until some one stated that he disliked teaching intensely. A distinguished member of the committee said "Why may this not be done? There are about forty lectures given in the course; there are eight instructors in the department; let each give five lectures and the problem is solved." The man in question, if my memory serves, was recommended for the appointment but wisely recognized his own true destiny. Words fail me in my condemnation of the unwisdom of such an attitude, which relegates the art of teaching to one of the least important of qualifying attributes.

### QUALIFICATIONS OF TEACHERS

Without a genuine love of teaching, I believe, very few men can be good teachers. It is an inborn faculty, which no doubt can be cultivated, but not created, by practice. It defies description, formulation and analysis. I doubt that much about it can be taught, but I suspect that imitation whether conscious or not of a great teacher by the neophyte is often a great help. A teacher should have receptivity and critical sense which makes him alive to scientific progress and keen in evaluating its permanent and true value; he should have the enthusiasm and personal magnetism which inspire interest, and he should have the power of lucid interpretation and presentation; he is the radio through which the soundless waves of scientific thought are made audible to his students. If he is himself an original investigator, so much the better. A conviction which I hold very strongly is that the teachers of the preclinical as well as of the clinical branches should be graduates in medicine and that their eligibility is further increased by the fact that they have held internships in medicine or surgery or both, and still further by more experience as hospital residents or as practitioners. Such a statement would have seemed quite superfluous and alarmist twenty-five years ago, but my hearers must be aware how widely the professorial and many lesser posts are held by doctors of philosophy in anatomy, physiology, biochemistry and even pathology and bacteriology—men who have no M.D. degree and have no experience whatever with sick people. Some five years ago I ventured to speak of this in a paper before the American Surgical Association. Briefly, my theme was to call attention to, and express disapproval of, the degree to which gross anatomy was being disparaged and eclipsed by other studies, as indicated by the less time devoted to it, which is inevitable, but more especially by the fact that its teaching was passing into the hands of biologists with no medical training, who frankly considered that it was a dead and unprofitable subject and devoted their real energies to the prosecution of research in experimental and comparative morphology, embryology and cytology. The response from the Fellows of the Association and from anatomists and surgeons in America, Canada and England was remarkably unanimous and explicit in approval of my contention; of 150 letters received, only six expressed disagreement in essential particulars. This encouraged me to believe that my position was not that of a reactionary but expressed the views of those for whom medical education is organized—the physicians themselves, who after all should know better than any one else whether the tools which have been forged for them to work with are useful or not.

### ANATOMY IS MOST IMPORTANT

I cannot conceive how anatomy can ever be regarded otherwise than as one of the most important of the basic studies, worthy of exposition by a teacher of the highest rank and emoluments. For years the only laboratory branch of instruction, it finds itself now in the company of a succession of more recently developed associates of equal importance and making equally deserving claims on the time schedule of the curriculum. Its relative importance is not one whit reduced. Without a knowledge of the form, structure and architecture of the human body there can be no science or practice of medicine. It should be in the hands of a teacher who has at least the knowledge of medicine and surgery conferred by a medical education and by a hospital internship and who therefore understands the clinical significance of his subject. I quite agree with those who recall without enthusiasm the long drill in the minutiae of descriptive anatomy of the British school of the nineteenth century, the relic of the epoch when anatomy stood supreme in its importance as a laboratory subject, but it is precisely the teacher with experience in clinical work who can differentiate between that which is important and useful and that which may wisely be passed over; who can make vivid and significant the otherwise proverbially dry study of anatomic structures undertaken before the student can have more than a vague idea of the application to his life work of what he is doing. I am not convinced of the wisdom of providing the student with a cadaver, a manual of dissection and a minimum of personal instruction and leaving him to work out his own anatomic salvation in the limited time available in the modern crowded curriculum. At the Harvard Medical School an elective course in the fourth year has long been given in applied anatomy consisting of demonstrations by a teacher of clinical surgery and dissection by the student directed especially to personal verification of the structures and relations which underlie the diagnosis and treatment of diseases medical, surgical or in any special fields except the eye and ear. This course, though exacting, attracted a large attendance. What was particularly interesting was that certain graduates of a medical school of the highest reputation where gross anatomy has suffered something of an eclipse asked permission to attend one or two of these exercises to refresh their knowledge of some special point and thereafter, as opportunity offered, attended most of the course, saying that in their undergraduate years the subject had never been presented in such a way that they could realize its significance.

### SCARCITY OF TEACHERS

Opinions may differ as to the importance of anatomy in the scheme of medical education, but does it not seem a pity that it should not be so taught as to secure its greatest possible contribution to the education of the physician? It is said that it has become difficult or impossible to secure competent men to devote themselves to teaching gross anatomy, and no doubt the development of other laboratory disciplines offering more fertile possibilities for original investigation have attracted many teachers from the older field. But is it not fair to believe that disparagement of gross anatomy as a subject scarcely worthy of an able and ambitious teacher, with thinly veiled contempt for him who teaches it, that the statement that it deals with "nothing but fixed protoplasm," that it is "nothing more than a handmaid to medicine and surgery," that the anatomist is "only an anthropotomist," that "the days when the anatomist commanded the respect and confidence of his medical colleagues solely on the basis of his knowledge of static morphology are rapidly disappearing"—is it not fair to believe, I say, that such attitudes held by faculty colleagues are the surest means to keep competent men from the vocation? From unsolicited correspondence about this issue I could quote a score of statements like the following from the professor of anatomy in one of our most important schools: "I deplore the supplanting of medically trained teachers of anatomy by . . . zoologists who have no interest in or knowledge of medicine. The younger teachers of gross anatomy are ill paid and their acceptance of the position is looked down on by those in the experimental field"; and another: "Human anatomy loses its vitality when perfunctorily taught by one whose primary interest and experience is in a narrow field of abstract biochemical problems"; and again from a distinguished authority in public health: "I took it for granted that structure was the basis on which to build any medical edifice. . . . I have never regretted the time and labor spent in this discipline." A long time teacher in one of our oldest schools notes a *reductio ad absurdum;* "They advertise a course in applied anatomy given by a full-time laboratory man who has never had a patient."

### THE REMEDY SUGGESTED

To complain of abuses and not suggest a remedy is captious and unconstructive. I am certain that among those well trained in clinical work through internships and resident posts, and perhaps by subsequent practice, may be found men who have found anatomy absorbing, who love teaching, who, if offered full professorial rank and salary and assured the respect of their fellows, would be proud to accept the chair of anatomy and discharge its duties with the distinction and usefulness of the late Thomas Dwight. Such a man would himself be an inspiring teacher and would not delegate the major work and responsibilities to less competent men, in spite of which he would find time to pursue the interesting problems which still await study in gross anatomy or to work in embryology, comparative anatomy, physical anthropology or some allied subject. His chief delight, however, would always be helping his students to a knowledge essential to make them competent practicing physicians. Circumstances might alter the exact conditions surrounding his work in various ways. If funds for a full-time salary were not available it might be possible for the professor of anatomy to be also an attending surgeon in the university hospital with privileges of having private patients within its walls. For such a teacher, however, to be obliged to earn his living entirely in outside private practice would probably make it impossible for him adequately to discharge his duties. In any event, his rank should correspond to that of his colleagues in charge of equally important departments. On the same principle I feel sure that younger men with clinical experience and probably with surgical ambitions would be glad to devote adequate time for some years to supplementing their work and teaching in the laboratory, provided both their titles and their salaries reflected honorable esteem on the part of their colleagues in other departments. The proficiency in anatomy derived from constantly repeated dissection is one of the three portals leading toward competence as a surgeon: the others are apprenticeship and work in operative surgery on animals.

Gross anatomy has been emphasized in this discussion because it has become the most conspicuous example. It is understood of course that its sister subjects microscopic anatomy and embryology, usually classed together, constitute just as important a member of the premedical group. Because they are so much younger, because the improvement of investigative instruments and technic permit ever deepening delving into their unsolved secrets, because the problems of cell structure and growth are so intimately related to their physiochemical nature both in health and in disease, these subjects will always attract investigators. But I feel almost as strongly as in the case of gross anatomy that if these investigators are to be teachers of medical students their effectiveness and their own interest in teaching will be greatly increased if they themselves have a medical education and also, if possible, the brief but intensive clinical experience which goes with a hospital internship. The same principle applies to the other preclinical branches—physiology, biochemistry and pathology. If the teaching staff in the departments of physiology and

pathology have had clinical training and personal experience in diagnosing and caring for patients who manifest the disordered function and the tissue changes which constitute disease, their teaching may be made vivid and significant in a way otherwise scarcely possible. Let us take an example. In gross anatomy the student demonstrates the blood supply of a given part, not forgetting the anastomoses which permit collateral circulation; in histology he sees the smooth muscle and elastic elements and endothelial lining cells of arteries, veins and capillaries; in physiology he studies the dynamics of the circulation, including its control by vasomotor influences and the passage of fluids and of substances in solution and suspension through vessel walls into tissue spaces; in pathology he studies the inflammatory and degenerative changes of the vessels which impair normal function; in biochemistry he learns the chemical attributes of the blood and tissue fluids. Now suppose that each of these teachers points out briefly and simply the clinical significance of the subject and some of the phenomena which occur in the living patient, the result would be an intense interest on the part of the student and an understanding of the fundamental mechanisms of vascular diseases and of shock. Each subject would experience the vitalizing effect of the demonstration of its clinical importance. The premedical teacher will at once point out, and often justly, that the clinician on his part neglects to introduce the relevant facts of the basic sciences into his teaching. The allegation is too often correct. The clinician should permeate his teaching with these fundamentals, thus stimulating the students to study and review them.

### THE TECHNIC OF TEACHING

The technic of teaching—the relative value of different methods—has always interested me. The metamorphosis of medicine from a study based on observation and classification to one based on scientific facts, which has taken place since the beginning of the last quarter of the nineteenth century, has been accompanied by the decline of dogmatic authoritarian teaching and the establishment and rapid rise of work in the laboratory, where the student must verify and investigate the already established scientific facts of the medical sciences and learn and practice the technical methods which he must know in order to apply them in his later work. Clearly the change implies that the student becomes self taught by doing things for himself, but this requires the personal supervision of instructors who must help the students either individually or in small groups. The same principle has been applied to work with patients, so that "section teaching" has become the accepted mode, and the lecture by a professor—meaning a senior teacher of wide experience—is thought to have lost its usefulness. No doubt this is a great step in advance, but I should like to point out certain disadvantages. The great increase in the number of subjects in the curriculum due to the development of the medical specialties, and the employment of the principle of section teaching in most of these subjects, have increased to almost fantastic degree the number of teachers in proportion to the number of students. At the Harvard Medical School, for instance, there are normally 525 students and somewhere between 550 and 600 names on the list of teachers. I leave it to the mathematically inclined to figure the theoretical fraction of a student to each teacher. The point I wish to make is expressed by this question: Is it reasonable to suppose that even in the Athens of America there is a majority among these men with the rare attributes of a good teacher? As a whole they are a picked group, but they are human and are guided by such human motives as love of teaching, a sense of duty to society, a realization that teaching is the greatest incentive to their own self education, the obligation to teach attaching to their clinical post, the hope for prestige and, last and probably least both in fact and as a motive, the stipend. Some of these motives lead to good teaching, some do not.

### A PROFESSOR DEFINED

As an antithesis to this picture stand the professor and the disparaged didactic lecture. As I intend to say a word in their favor, I must define the terms. By professor I mean a man of seniority, of ripe experience and of broad cultural background, who, whether or not he has participated in widening the field of medical knowledge by research, has assimilated discoveries and has tested them by experience; who has the faculty of interpreting and expounding ideas and who loves the doing of it. The adjective "didactic" simply means instructive, but it has acquired the connotation of a dogmatic discourse bearing the stamp of final authority and unilluminated by patient or specimens or by other objective examples. An example of it may be found in the reminiscences of President Eliot, where he describes the lectures in the Harvard Medical School in 1869 as read by the professor from sheets yellowed by age, as had been done for years. Or let Mr. Abraham Flexner speak: "Out and out didactic teaching is hopelessly antiquated; it belongs to an age of accepted dogma or supposedly complete information." There is no reason why the word "didactic" should be narrowed to such a meaning; for our present purpose let it mean a teaching exercise before the whole class, or a large part of it, conducted by the before described professor and illustrated or not, at his discretion, by patients, specimens, lantern

slides or technical procedures. "Oh, a clinical lecture," you say. Well, let it go at that; it is didactic and the point I wish to make is that it constitutes a most important and irreplaceable means of teaching. That shameless satirist George Bernard Shaw expresses the idea when he says (in quite a different connection) that it is better to have a sixth part of a first-rate man than the whole of a sixth-rate man. From recollections of my own experience and from the testimony of many physicians about what in their medical education they looked back on with pleasure and a feeling of profit, I am convinced that the type of lecture I have described has a very important place among methods of pedagogy. It is no doubt impossible clearly to describe the nature and source of what the student receives from such a personality; but any one who has sat under an Osler, a Fitz, a Billings, a Pepper, a Shattuck knows what I mean. Such a man interprets the facts of medical science, evaluates and reconciles conflicting views, helps perspective and a sense of proportion, paints the high lights and the shadows which contribute to interest and a sense of reality, and injects that indefinable something which derives from a distinguished personality. If his learning is built on a foundation of cultured and ethical ideology, these things, though farthest from his conscious thoughts, will not be concealed from his hearers. Better, I say, that for a part of the course 100 men are taught by such a man than that in sections of ten they should sit under men of lesser caliber.

### THE PLACE OF RESEARCH

I have hinted broadly enough to be understood, I fancy, that I feel that skill in teaching is a high attribute which is not treasured, encouraged and rewarded as it should be in the contemporary medical scheme of education. Inevitably this brings up the subject of research and its place in the medical school. I could almost wish that the words "science" and "art" of medicine, "laboratory" and "clinic," "research" and "practice" could be banished from our current terminology or by some all-powerful ukase be relieved of the almost antithetical meaning which tends to be attached to them. There is a clear tendency for the faculty of a medical school to be divided into experimental laboratory researchers and men who practice the art of medicine clinically; and naturally the more richly supported or endowed the school, the more numerous and conspicuous are the former group. Somehow, I suppose because we are all human, there sometimes arises lack of a perfect mutual understanding or jealousies based on grievances related to the allocation of time in the curriculum or to budgets or to the reputation or status enjoyed in the academic world. The amazing advances in medicine due to scientific investigation which have blessed us in the last seventy-five years—a period when, as has often been said, medicine made more progress than in the twenty odd centuries since Hippocrates—have justly glorified research, but would it not be unfortunate if this apotheosis of research should lead to the neglect of practice? Is it unreasonable to wish that the sickroom, the hospital ward, the ambulatory clinic should be considered to be laboratories where, in the words of the lexicographer, a "diligent, studious inquiry" is made by a researcher, using a hypothesis (a necessary step in scientific investigation) or in other words a diagnosis, which he proves if possible by scientific methods at his disposal and then proceeds to use the experimental method in applying curative or alleviating measures? For what is more true than that every therapeutic measure, be it operation, manipulation, medicinal administration or mental suggestion, is in the nature of an experiment on the human animal? An inquisitive and investigative spirit should pervade the medical school in every laboratory, lecture room and clinic. Every student should look on himself as an investigator engaged in research as he dissects the cadaver, as he cuts, stains and examines tissue sections, as he assists in physiologic demonstrations, as he observes and studies the organs displayed at the postmortem table, and later in the clinical years as he helps to take clinical histories, to make physical examinations and to assist in the giving of treatment. Every teacher should realize that he is a director of research and saturate his teaching with the revelations of the experimental laboratory, with the principles derived from the fundamental preclinical sciences, with the illuminating light shed by historical allusion, to the end that the patient and his problems serve to focus and integrate all the disciplines and methods and events by which medicine has evolved.

### MISGIVINGS IN MANY QUARTERS

Enough has been said to indicate that the spirit of investigative inquiry, together with the obligation to teach superlatively well, should be the dominating preoccupation of the medical school. So much for an idealistic statement; but from a practical standpoint what shall be the place and the conditions surrounding experimental laboratory research? Medical research is now carried on intensively in a few research institutes, in the experimental laboratories of the great commercial medical supply houses and in the many schools which can afford such an enterprise; indeed, so important has formal research become that sometimes it is not inappropriate to inquire, absurd as it may seem, what the primary object of a school may be! The most level headed of medical educators have not differed from the statement of C. W.

Eliot at the dedication of the buildings of the Harvard Medical School that "whatever else the regular education of the physician provides in the future, it must provide all the elements of the best training for the practicing physician"; or that of W. H. Welch, who after speaking of the evolution of the scientific laboratory said "The purpose of medical education, however, remains today what it has always been and will continue to be—the training of the student for the practice of his profession." But another view is at least suggested by the department head of one of our greatest schools when he says "A medical school must be judged *not only* by its research but by its students" (italics mine) and this emphasis on laboratory research is confirmed by the prestige attaching to it, which may secure the allocation of available funds from the school budget to a degree which works positive injustice to other activities and which often speciously invests the pure laboratory worker with the attributes and qualifications of a clinical teacher so that he is transferred to be the head of a clinical department. The originality and imaginative qualities of mind, the enthusiasm and power of concentration, the selflessness and other elements which usually characterize the really productive investigator are not often found combined in one man and rarely mean that he is an effective teacher or an able clinician. As a type is he superior or more worthy of admiration than his colleague in clinical teaching whom I have tried to delineate? Chance favoring his prepared mind, to paraphrase Pasteur, he may be the one among a thousand to make a discovery of lasting and incalculable benefit to mankind; if such he is, he should be protected and not urged to accept the leadership of a department where his time and strength are employed in probably uncongenial and possibly ill executed duties of teaching and administration.

The prevailing emphasis on research has occasioned misgivings in many quarters. So keen and wise a teacher and investigator as the late Francis W. Peabody wrote "One may reasonably question whether the large proportion of the budget devoted to research . . . and the great stress that has been laid on research ability in the selection of teachers is justified . . . when one considers that really significant research is unusual." As I have watched succeeding generations of students mature and the ambitious among them seek by every honorable means to establish their fitness for hospital and teaching posts, I have deplored the evident compulsion which they feel to win their spurs, to engage in experimental laboratory research, in order to "produce" something, an "arbeit" if we revert to the Germanophile period of medicine. And what is produced? Too often, I fear, an uninspired tenuous report which has worked over some relatively unimportant problem and reached and verified facts already established or slight variants thereof, the whole communicated often in a series of fragmentary papers each with its imposing title. The work has been undertaken in an honest and laudably ambitious spirit, but the aptitude and inspiration are lacking, time and valuable materials, including experimental animals, are wasted, and a man whose talents should lead him to successful practice or teaching or administrative work experiences a disappointment which may harm his whole career, all because of the pernicious (as I believe it) doctrine in some academic circles that advancement should depend on research. Who of you who are faculty members have not sat on appointing or advisory boards considering the eligibility of candidates for a teaching post and heard the question "What has he produced?" while the pages of a typed dossier are turned bearing the titles of research work done, in press, in course, or projected. Would not the reply of Daniel Webster be appropriate, who, while seeking an appropriation for his native New Hampshire, was asked what the state produced. "Men," said Webster, "and God has graven their image in the granite of her hills." Men, then, are the product of a medical school, men to bring the benefits of scientific medicine to mankind and further to widen the confines of knowledge, each according to his talents.

### PSEUDOSCIENTIFIC PUBLICATIONS

Signs are not wanting that the possible overemphasis of laboratory research is creating concern among thoughtful educators. At Harvard, comparatively recent accessions to resources were largely devoted to strengthening the clinical departments. Sir Thomas Lewis deplores the distinct cleavage between clinic and laboratory due to the prevailing association of research with the latter, and says, mincing no words, "The serious aspect of the widespread engagement in transient research is that, while such work rarely possesses scientific value, yet reporting of it has acquired a recognized commercial value and this latter becomes more often than not the real goal in view." A sympathetic chord will be struck in my listeners' souls by his reference to "attempts to stem the tide of pseudoscientific publications" and to "our library tables groaning under an ever increasing weight of periodicals." Often evidence from the laboratory is misleading in pointing to alleged expediency of changing methods which have proved thoroughly satisfactory in actual practice. For instance, recent well conducted experiments have apparently shown that, if the pressure in the biliary system of the dog is measured by a manometer tube inserted into the common duct, the administration of morphine increases that pressure, presumably by

causing a spasm of the sphincter of Oddi. Since the early restoration of the secretion of bile into the duodenum is desirable, the implication is clear that the use of morphine after operations on the biliary passages is contraindicated. Suppose that a surgeon of experience whose operative mortality and morbidity are favorable has found that the routine use of morphine has been uniformly apparently beneficial, with no evidence of contraindication; shall he give up its use? He will find that the younger generation who watch his work and read current literature will criticize him if he does not. I observe the almost routine use of blood transfusions and parenteral fluids as a result of the studies on water balance and serum protein ratios, the employment of transnasal gastric and duodenal siphonage and intestinal balloons. These measures are occasionally life saving, often beneficial but frequently unnecessary, since nature provides a wide margin of safety to adjust deviations from the normal, and a patient may suffer more discomfort and annoyance than benefit. A matter which, I believe, must be recognized and faced sometime is the question of the justification and ethical propriety of frankly experimental procedures on the human patient not designed directly as therapeutic measures. A candid reading of current literature and attendance at medical gatherings convince me that this situation exists. Undertaken with the zeal and pure motive of the laboratory researcher, and usually with the consent of the patient, they offer tempting possibilities for the determination of new facts which may become of importance in medical science and practice; but they may carry with them unfortunate possibilities of harm. The temptation to the devotee of scientific research is great. As Lewis says: "Progressive medicine to be fruitful must be experimental and original. It sometimes conflicts with full solicitude for the sick." Where shall the line be drawn? If such an evil exists, it is to the credit of our profession that its shadow is still scarcely perceptible.

### THE SPECIALTIES

The teaching of the specialties and their place in the curriculum have been somewhat of a problem. We know how essential specialism is and how richly it has contributed to the advance of medicine, but we deplore the tendency for the specialist to lose a broad grasp of medicine as a whole and to look for the cause of ill health solely in his own narrow field. With the establishment and recognition of each specialty, it was the laudable aim of the medical school to furnish a fairly adequate amount of instruction in each. Some of us have come to the conclusion that this is both unwise and impossible: that undergraduate teaching should include only the basic things which enable a student to integrate the specialties with medicine as a whole and later as a practitioner to recognize symptoms and signs which require him to seek expert assistance. The intensive study of a limited field should be postgraduate work and most of us are agreed that it should be preceded by adequate general clinical experience, such as that afforded by two or more years of general practice. Of the latter I am doubtful; perhaps it depends on the particular specialty. The ophthalmologist and the otologist, it would seem, would waste their time in preliminary general practice, when a good internship of two years' duration would furnish in concentrated form a more than equivalent experience. On the other hand, a man planning, for instance, to devote himself to neurology, gastro-enterology or cardiology would find a broad clinical experience highly advantageous. The various specialty examining and certifying boards are setting high qualifications for their diplomates, and though it is unlikely and perhaps undesirable in this country dedicated to democracy and free enterprise that legislation will ever confine special practice only to specially qualified physicians, the work of the boards is bound to be reflected in a higher level of medical practice.

### FULL-TIME TEACHERS

Perhaps a word or two is not out of place about a problem formerly much discussed—that of full-time teachers in the clinical as well as in the laboratory branches. It would seem to be but common sense to believe that it would be wholly advantageous that adequate funds might be available to enable clinical teachers to devote their whole time to their work, without the necessity of engaging in private practice to support themselves. When this issue became acute on account of the proffer of funds for this purpose to certain medical schools, much controversial discussion was aroused and certain lay representatives of educational foundations expressed unfortunate disparagement of the work and character of many practicing physicians holding clinical professorial posts in medical schools, picturing them as selfish men doing perfunctory teaching—always neglected for the demands of private practice—in commercial schools conducted largely for the financial benefit of the faculty. Such a picture is so utterly at variance with the facts as I have known them that I cannot refrain from protesting. The clinical teachers (on "part time") whom I have known at close range—and I have no reason to think that they were peculiar in any way—were a devoted, conscientious, enthusiastic group, whose salaries were trivial and who performed their academic work at the expense of their practice. Being human, their motives no doubt were variously mixed; but I believe that those related to altruism and public

spirit far outweighed those essentially selfish. They were true disciples of Hippocrates. It would be absurd, of course, to deny that the principle of full-time clinical teachers has brought great benefit to the quality and quantity of medical instruction. The complexity and breadth of the curriculum tend to make greater demands on the teachers of professorial rank in spite of the more numerous personnel. That it is often impossible to secure the services of the ablest men on a full-time basis, because of their unwillingness to forego the pleasures and satisfactions of private practice, is of course inevitable and unfortunate, a drawback which increasing familiarity with the new dispensation and the diminishing return from practice which is a part of the handwriting on the medical-economic wall will probably correct. But I should be sorry to feel that the successful practitioner, whether specialist or not, had no honored place on the faculty of medicine. It seems only logical, as Osler pointed out, that since at least 90 per cent of medical students will enter practice they should be taught by men who understand the problems peculiar to practice as well as the science of medicine. Those who spend their lives in laboratory and hospital ward, with notable exceptions, do not acquire an indefinable quality or skill or attitude of mind and heart which characterize the well rounded physician—attributes which his assistants or students, as the case may be, are pretty sure to acquire from him from simply watching and listening to him as he works. Francis W. Peabody wrote: "In clinical teaching the active practitioner of internal medicine plays a very important role and he should receive positions and titles corresponding to the contribution he makes, . . . in my mind there is no question that the man whose practice is largely outside the hospital can bring something to students and staff that it is difficult for them to get otherwise." A like conviction was held by one of the greatest teachers, William S. Thayer, who said that "such an idea as to place clinical teaching in the hands wholly of university professors and to exclude the practitioners from hospital and school could hardly enter the mind of one experienced in medical teaching." The regius professor of physic at Cambridge, Dr. Ryle, says "Any system of medical education which treats him (the clinician) as a secondary figure stands self condemned." One of my own nightmares has been a vision of a patient in a university hospital interviewed, measured, weighed and pictured, every nook and cranny 'scoped, every fluid and secretion analyzed, affording a sheaf of reports duly recorded on a punch-card, which is fed into the maw of a computing machine whence issues the mechanically accurate diagnosis and treatment, which is handed to the patient by a robot.

### MEDICINE IS DYNAMIC

The hypothetical student whom we have followed through preparatory school, college, medical school and hospital internship, and even through the specialty examining board examinations, is now ready to practice and, it would seem, might be no longer the recipient of officious advice from his would-be educators. But ahead of him lies a problem almost as important as his primary medical education, and one which defies efforts at satisfactory solution; for, as has been pointed out so often, medicine is dynamic rather than static, and the education of the physician must be a continuing process throughout his life. From the nature of things this must be largely self education. W. M. Johnson, in a delightful paper on "Clinical Research in Private Practice," defines research as "studious inquiry" and remarks in homely and pertinent fashion "Every general practitioner worth his salt does this every day of the week including Sunday." True enough; but general practitioners are not supermen, and the majority fall soon enough into routine. They must be helped to continue their education; the problem is difficult, because so much of practice depends on technical methods which are difficult to acquire except by personal participation in their execution under one who knows how. On the one hand it may be impossible and it certainly will be temporarily disadvantageous for a busy practitioner to leave his work frequently for a course of postgraduate study; on the other hand it is equally difficult for the undergraduate teaching hospital, without dislocating its service, to give opportunities to graduates to become apprentices—that is, the equivalent of interns—for brief periods, which is the only way certain things can be learned. Postgraduate courses, assemblies, stated periods of study and travel are among the laudable efforts that are currently made. I offer no panacea, for I have none, but I wish to point out that the standards and ideals which the student absorbs from his teachers will necessarily be the greatest factor in stimulating and enabling him to pursue throughout his life a continuing education.

Our astounding progress in solving the secrets of nature leaves little room for doubt that a succession of victories over organic disease, as awe inspiring as the wicked perversion of this progress toward compassing the destruction of humanity which we are witnessing today, lies directly ahead of us. How much they will benefit our race depends on the quality of the human elements in the drama—student and teacher—and the valuation which they place on spiritual issues.

Peter Bent Brigham Hospital.

# Comments and Reviews

## A STUDY OF AMERICAN RHODES SCHOLARS

*Condensation of a paper by Frank L. Apperly, Medical College of Virginia, Richmond, published in The Journal of Heredity, November 1939.*

When discussing the implications of birth control some years ago, I expressed the opinion that an undue proportion of the world's great men and benefactors were among the later children of large families and that in earlier times a widespread practice of birth control might have meant a loss of these men to the world. The great man is so largely a product of chance, opportunity, national crisis, force of will and mental ability that it is impossible to draw definite conclusions concerning the antecedent factors likely to lead to greatness. We can, however, measure mental ability with some accuracy and endeavor to correlate it with possible antecedent factors, such as size of family and order of birth in family.

Opinions on these matters vary. Dr. Ronald Fisher says that where there are many children the younger ones tend to grow progressively less intelligent in a ratio corresponding to their numerical place in the brood. Dr. Leta Hollingworth, whose studies of gifted children are well known, also is said to believe that oldest children or only children tend to be the most brilliant. On the other hand, Dr. Ellsworth Huntington, of Yale, states that one can almost predict a college student's success from the size of his family and that, "other things being equal, the size of the families from which Yale students are derived is closely proportioned to the student's degree of success."

Dr. J. McKean Cattell, in a study of 855 leading American scientists, showed that an unduly large proportion of first sons had attained distinction but that among later children the place in the family made but little difference. There are many theoretical factors which might favor the eldest children. On the other hand, in America, where large families are apt to improve their economic position, the younger sons are more likely to be sent to college than the older ones. Furthermore, there is a higher prevalence among the eldest children of certain physical defects. First children have a lower birth weight than the younger members of the family and a higher stillbirth and infant mortality and a higher rate of certain forms of early mental deficiency and epilepsy. While Dr. Cattell's investigation, made more than thirty years ago, seems to be the most nearly complete answer to the problem, there is an element of chance, difficult to assess, in becoming a "leading scientist." The economic factor, for example, sometimes compels a potential first rate scientist to enter business or practice a profession. Many other things may make or unmake a man before he reaches the age of distinction.

### STUDY OF AMERICAN RHODES SCHOLARS

With these varying opinions in mind, I undertook to study a group of men chosen purely on intellectual and personal qualifications at an age early enough to overcome in part at least the element of chance in attaining distinction. I selected for study the American Rhodes Scholar group and sent a questionnaire to all ex-Rhodes scholars living in America, and with the help of C. K. Allen, warden of Rhodes House, Oxford, to 166 American and British Rhodes scholars then at Oxford. Information was thus obtained from 930 men. These scholars were grouped in a table according to the size of their families and to their own position in these families. In another table the female children of these families were ignored and a similar analysis made of the male members only.

The tables show the great predominance of the eldest ones in small families, a predominance which, however, diminishes with increasing family size. This is in agreement with Cattell's investigation. The second striking result of these tabulations is the especially predominant position of the "only" boy. The table which included only the male members of the family showed that 8.4 per cent of the Rhodes scholars were "only" children, while the other table, which included both sexes among the children in these families, showed that 27 per cent of the group were "only" children. This would indicate that, whereas the only child has some slight preponderance, the "only" boy with one or more sisters predominates in qualities which in the opinion of those who selected them as Rhodes scholars were most likely to make an unusually gifted and useful citizen. Another noteworthy result is that in the larger families the figures appear to be more evenly distributed, with however, as far as the small numbers are reliable, a tendency for the scholars to appear at the end, especially in families of ten or more children. The fact that the only boy with sisters is so far ahead of any other boy with a corresponding number of brothers, or brothers and sisters, appears to indicate the operation of some home influence rather than an economic or biologic factor. Is the only boy in a family of girls less distracted from his studies than he would be by brothers? Does he have to face and solve his problems alone and thereby gain personality and ability? Is he given more

chances for education than would be the case if his chances had to be shared with other brothers? Other factors suggest themselves, but, whatever the answer, it seems fairly clear, as far as we can judge from the facts presented, that the eldest child in small families is more likely to have the fullest development of his powers of intellect, leadership and social ability, and therefore be of greater value to the community.

# Medical College News

*Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items to be considered for publication in the Student Section.*

### Residence for Interns at Ann Arbor

The new residence for interns at the University Hospital, Ann Arbor, Mich., with accommodations for sixty-one house officers, was opened for occupancy December 21. The building has three stories and a ground floor and is designed to permit the addition of two additional stories. It is located just north of the Neuropsychiatric Institute and is connected to the main hospital by means of a tunnel. On the ground floor are a large recreation room, handball court, kitchen, trunk room, housekeeper's apartment and a dark room for camera fans. The majority of the rooms are single, but some are double rooms. On the second floor is a large panelled lounge with built-in bookcases, overlooking the Huron River, the hills and the golf course.

### Student Health Service Building at Minnesota

A new $110,000 building to accommodate the student health service was dedicated at the University of Minnesota, Minneapolis, November 10. Among the speakers were Guy S. Ford, president of the university; Dr. John Sundwall, health director at the University of Michigan, Ann Arbor, and the first director of the student health service at the University of Minnesota when this service was instituted in 1918; Dr. Ruth E. Boynton, present director of the student health service, and Dr. Harold S. Diehl, dean of medical sciences at the University of Minnesota Medical School.

### Milwaukee Libraries Consolidate

The Library of the Milwaukee Academy of Medicine and the Library of the Marquette University School of Medicine, Milwaukee, were officially consolidated Oct. 17, 1939, at which time Dr. Irving S. Cutter, dean, Northwestern University Medical School, Chicago, gave the dedicatory address. The newly formed library contains 30,000 volumes, ranging from first editions written by Vesalius, the father of modern anatomy, and Ambroïse Paré, the first great surgeon, to the most modern textbooks; also the current numbers of 379 medical periodicals from all over the world. It is the hope of the university authorities that through the medium of the library there will be molded a harmonious link between the medical school and the medical profession.

### Tuberculosis Symposium for Students

The College of Physicians and Surgeons of Columbia University, New York, conducted its annual tuberculosis symposium for the students in Amphitheater A at the College, Nov. 9-11, 1939. Dr. James Burns Amberson Jr. discussed "Conceptions of Tuberculosis and their Clinical Implications"; Dr. Haven Emerson, "Epidemiology and Prevention of Tuberculosis"; Florence B. Seibert, Ph.D., "Tuberculin: Its Nature and Uses'"; Dr. Max Pinner, "Pathogenesis of Tuberculosis"; Dr. Kendall Emerson, "The Antituberculosis Campaign in the United States"; Dr. James Burns Amberson Jr., "The Early Diagnosis of Tuberculosis and Case-Finding Methods"; Dr. Oswald R. Jones, "Differential Diagnosis"; Dr. Edith H. M. Lincoln, "Clinical Course of Tuberculosis in Children"; Dr. James Alexander Miller, "Clinical Course of Tuberculosis in Adults"; Dr. Edward Percy Eglee, "General Treatment of Tuberculosis," and Dr. Francis B. Berry, "Surgery in the Treatment of Tuberculosis."

### Dimes

The library of the School of Medicine of Louisiana State University, New Orleans, for economical reasons, has decided to drop its subscriptions to all nonscientific publications, except the local daily papers, and to apply the money to subscriptions to medical journals. This decision will especially affect their subscriptions to *Life, Time,* and the daily New York *Times.* The *Tiger,* a journal of the school of medicine published by the students, points out that even if students were so inclined, it would be a mistake to limit all of their outside reading to scientific journals. The *Tiger* has placed a milk bottle at the telephone desk to receive contributions to provide for subscriptions to these nonscientific periodicals. It is said that 10 cents from each student would make it possible to subscribe to the three publications dropped and provide means to include an additional one. Should the funds collected be insufficient to provide for all of these publications, the order of preference in subscribing will be, *Life, Time,* and the New York *Times,* for as much of the year as possible.

### Estimate of Expenses at New York University

According to the bulletin of New York University College of Medicine, New York, the estimated expenses for students taking a full course for one year amount to $1,155.00. This allows $600 for general instruction including laboratory, library and medical fees; $288 for board, $192 for room, and $75 for books and other supplies, not including a microscope, which is required of all medical students.

### Scholarships and Loan Funds at New York University

The Joseph D. Bryant Scholarship is awarded annually at New York University College of Medicine, New York, to some worthy medical student from Norwich, Chenango County, N. Y. The Charles Hayden Scholarship is awarded annually to a needy male student of the metropolitan New York and Boston areas. The Christian A. Herter Research Scholarship is awarded annually to a student who has demonstrated aptitude for physiologic and chemical research. The Eastern Medical Society Scholarship, the gift of this society, provides full tuition for one student or part tuition for two students of the junior or senior class. The Student Aid Fund is used to aid students who are

beset with financial difficulties in the third or fourth year classes. In addition, New York University College of Medicine offers prizes and medals for outstanding work in various departments. For example, the Glover C. Arnold Surgical Prize is an award of $50 to a member of the senior class who passes the best examination in general surgery. The Alpha Omega Alpha honorary fraternity awards three prizes annually to the students who have stood highest in the class during their four years of medicine.

### New Staff of Student Journal

At a recent meeting the editors for the present year of the *Journal of Wayne University College of Medicine*, Detroit, which is published by the students, were announced as follows: Ben I. Jeffries, editor; Roswell G. Burroughs, associate editor; Mark Dale, alumni editor; Robert B. Rice, business manager; Dean R. Asselin, handbook editor, and Philip L. Nova, news editor. Warren O. Nelson, Ph.D., professor of anatomy, was appointed faculty advisor.

### Christmas at Ann Arbor

The entire personnel of the University Hospital, Ann Arbor, Mich., enjoyed a Christmas party held in the Amphitheater and Hospital Library, Dec. 13, 1939. A group of student dietitians contributed colored folk songs; student nurses also took part in the program. A humorous skit was furnished by Drs. Fred J. Hodges and Kyril B. Conger, and Mr. Robert Webb. Representatives of the administrative and professional staffs were in the receiving line.

### Class Officers at Indiana

The following class officers for the Indiana University School of Medicine, Indianapolis, have been announced:

Seniors: Elbert Harold Laws, Milan, president; Charles Champ McVaugh, Pendleton, vice president; Roland E. Miller, Plymouth, secretary, and Andrew C. Offutt, Spiceland, treasurer.

Juniors: Morris C. Snyder, Amboy, president; Embree R. Rose, Linton, vice president; Robert M. Maurer, Brazil, secretary, and John F. Ling, Hebron, treasurer.

Sophomores: Charles E. Green, Paragon, president; John Brink, Gary, vice president; Welborn Britton, Indianapolis, secretary, and Robert Peacock, Dunkirk, treasurer.

### The Student Activity Plan at Tufts

The student body at Tufts College Medical School, Boston, organized in 1932 the Student Activity Plan for the purpose of developing a broader cultural atmosphere and a closer unity among the students. The board of directors consists of the presidents of each of the four classes, one student chosen from each class by the dean for a one year term, an honorary member from the alumni, the dean, the bursar and an honorary member from the faculty. Only the students on the board have voting power, with the exception of the dean, who has a complete veto power on all measures brought forth by the board of directors. The board of directors cannot change any phase of the Student Activity Plan with reference to the functions, the policies or the allocation of funds without first submitting such matters to all four classes for consideration, three of which must approve before the matter submitted can be adopted by the board. The students on the present board of directors are: chairman, Walter E. Deacon, '41; treasurer, Herbert E. Flewelling, '41; secretary, Arthur F. Buckley, '42; Paul E. Black, '40; John F. Paget, '40, and John F. Gager, '42. All students are members in the Student Activity Plan, to which they contribute $5 a year.

Among the activities to which the Student Activity Plan gives counsel and financial aid are the following:

1. Medical History Club, which holds from four to six meetings a year.
2. Sir William Osler Society, organized for the purpose of honoring scholarship and serving as a tangible reward for the attainment of high distinction in medical studies, to which society six juniors and four seniors are elected each fall.
3. The Scientific Forum, organized to delve into scientific literature and to have monthly papers presented by members chiefly from the second and third year classes. These meetings are held at the homes of the various physicians on the faculty.
4. Fourth Year Students Optional Fund, which is accumulated for four years and then used for any activity which the senior student body shall approve, such as a year book, a banquet, a class picture or a gift to any department of the school.
5. Medical Students Loan Fund, established to provide temporary loans to needy students on application in writing to the Loan Committee. Loans must be paid, together with 6 per cent interest a year, before the beginning of the following year and in the case of seniors before commencement.
6. Building Fund, which runs for five years ending in 1940, with the understanding that if the trustees of the college then are not disposed to erect a building the fund will revert to such other funds as the student body approves. The purpose for this fund was to construct a building that would provide conference rooms, recreation rooms for students, a new library or a new amphitheater or administrative and faculty offices.
7. *Tufts College Medical Journal*, which is published four times a year by the students.
8. The William Harvey Society, which provides speakers to address the student body from time to time.

### Marquette Alumni

Dr. L. L. Adamkiewicz, a graduate of Marquette University School of Medicine, Milwaukee, in 1916, and a medical inspector in the U. S. Navy, is the chief medical officer with the present Antarctic expedition under Rear Admiral Richard E. Byrd.——Drs. Arthur J. Vandergrind and George T. Ferguson, graduates of Marquette University School of Medicine in 1937 and 1938, respectively, and now lieutenants in the U. S. Navy Medical Corps, are serving on the Yangtze River patrol of the Asiatic squadron of the navy.

### Columbia's Medical Library

The number of books loaned and used in the Library of Columbia University College of Physicians and Surgeons, New York, in the year ending June 30, 1939, was 94,695, an increase of 14.8 per cent over the previous year. A part of the increase in the use of the library facilities was due to changes in the methods of instruction at the school and to the students' greater employment of library facilities owing to stimulation by the library staff. Lectures on the use of the library were given by the medical librarian to some of the first year students, emphasizing particularly how to use the various indexes to the literature available in each particular field.

### Automobile Accident

Frank R. Cunningham, aged 24, a sophomore student at Temple University School of Medicine, Philadelphia, was killed in an automobile accident, Dec. 18, 1939, at Daytona Beach, Fla., while enroute to his home for the holidays in Miami Beach. With him were his father and mother and a former Yale classmate, all of whom were killed when their car struck a parked truck.

### Alpha Omega Alpha

The office of the dean of Woman's Medical College of Pennsylvania, Philadelphia, reports that Rose H. Klein and Barbara J. Harris, fourth year students at the college, have been elected to Alpha Omega Alpha.

### The Gorgas Medical Society at Alabama

The Gorgas Medical Society is an undergraduate society at the University of Alabama School of Medicine, University, founded in honor of William Crawford Gorgas, an Alabamian, former surgeon general, U. S. Army Medical Corps, former President of the American Medical Association and in charge of sanitation during the building of the Panama Canal. All students of the school become members of this society at the end of the first semester, but to be elected a fellow of the Gorgas society is the highest formal honor for any student in the school. Election to fellowship is based primarily on scholarship but is the result secondarily of secret choice of both faculty and students for qualities of character, personality and general promise for future usefulness in the profession. The details of the election to fellowship are as follows:

Each spring, after grades for the first three semesters are available, the dean's office submits to the faculty a list of students who, in order of scholastic rank, comprise the upper third of the class. From these names each teacher of professorial rank selects about one fifth of the class, listing them in the order of his personal choice, based on his own estimate of each student's scholarship, character, personality and general promise. In faculty meeting these individual lists are posted and a composite weighted list of nominees is prepared and approved by joint faculty action. The names on this weighted list are mimeographed alphabetically and submitted as ballots by the faculty adviser to the second year class in called meeting. Each member of the class votes "yes" or "no" before each name. Any ballot without a vote before every name is void. The ballots are folded and collected by a committee of students appointed by the president and approved by the faculty adviser. Nominees who receive a two-thirds favorable vote are elected fellows and their names published in the school bulletin.

The students elected to fellowship in the Gorgas Medical Society in 1938-1939 school year were William Alvin Camp, Charles Stafford Clay, Jane Mayse Matthews, John Mial Skeats, Henry Albert Weitz, James Carter Williams and William Gross Wood.

### Temple University

Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, addressed the student body of Temple University School of Medicine, Philadelphia, January 3 on "American Medicine and the Government."——The three local chapters of Phi Rho Sigma medical fraternity held their initiation ceremony jointly at the house of the University of Pennsylvania Chapter Dec. 9, 1939. Among the thirty initiates inducted, the following are the new members of the chapter at Temple University School of Medicine: Harry Leroy Allen, Joseph E. Durnin, William F. Hanisek, Clarence L. Lehman, John Y. Leiser, Howard E. Pratt, Donald H. Rice, Edward C. Uhrich, Grover F. Zerbe and Taras H. Rybachok. The joint ceremonies, which were begun in the afternoon, were concluded with a dance at the Hotel Stephen Girard.

### Scientific Activities of Undergraduate Students

According to the November 1939 *Bulletin of the Minnesota Medical Foundation,* Roger M. Reinecke, '40, University of Minnesota Medical School, Minneapolis, is studying the metabolism of fructose in hypophysectomized rats in the physiology department as the result of a Sigma Xi prize won last spring.——Harry A. Wilmer II, '40, has been studying the growth changes in the newborn and the adult and the blood supply of various organs by means of injections which permit the tracing out of the ramifications of the arterial tree. This work has been done in connection with Richard E. Scammon, Ph.D,, and Dr. Elexious T. Bell, respectively.——Fred Kolouch Jr., '40, winner of the Cutts Prize in surgery last spring, is continuing work this year on the cytology of inflammatory exudates.——Frederick P. Sedgwick, '40, has been carrying on studies on the effects of digitalis glucosides on the portal and other venous pressures in the dog.

### Michigan Personals

At an election November 10 the freshman class at the University of Michigan Medical School, Ann Arbor, elected Ralph D. Mahon Jr., Milan, Mich., president; Oscar A. Nelson, Lamar, Colo., vice president; Margaret F. McMahon, Toledo, Ohio, secretary.——James Henry DeWeerd, Holland, Mich., and Miss Elizabeth Alice Clark, Columbia City, Ind., members of the senior class of the University of Michigan Medical School, were recently elected to membership in Phi Kappa Phi, national honorary society.

### Fees at Tulane

The tuition at Tulane University of Louisiana School of Medicine, New Orleans, is $400 a year, excluding certain other fees amounting in the four years to $188. The total for the four years is $1,788. The library fee, for example, totals $8 for the four years, the medical service fee $40, the breakage deposit $60, the gymnasium athletic fee $40 and the graduation fee $10. The medical service fee of $10 a year provides for medical attendance by the university physician and for reasonable hospital expenses in cases of ordinary illness, under the rules of the Infirmary Committee. This medical service fee is required of all nonresident students, while resident students may avail themselves of these privileges provided they pay the fee at the time of registration. The student fee of $10 is applied by a joint committee to the support of various student activities and entitles each student to a copy of the annual publication and the weekly paper (The Hullabaloo). All students are required to pay this fee. Furthermore, each student entering the medical school is required to furnish his own microscope. Students are advised not to purchase microscopes or other equipment or books until they report for registration in September. Information about houses for boarding and lodging may be obtained from the registrar of the university. The price usually paid by students varies from about $37 to $45 a month. The school reserves the right to change the fees at any time for any year of the four year course.

### Scholarships and Prizes at Tulane

For the promotion of rural health services, the Commonwealth Fund of New York has provided four scholarships of four years each at Tulane University of Louisiana School of Medicine, New Orleans, to be awarded each year to students from the state of Mississippi. These scholarships provide $1,000 a year. The recipient must agree to serve at least a two years' internship in an approved hospital and then return to Mississippi to practice medicine in a rural section or a town of not more than 12,000 people for a period of three years. The Breaux Scholarships at Tulane, established by a legacy from the late Judge Joseph A. Breaux, are awarded annually to a limited number of students from Louisiana who meet certain regulations with regard to scholarship, character and industry. The value of these scholarships is $1,000 a year. The scholarships are a gift and involve no contractual or vested privilege of any kind. The Isadore Dyer Memorial Prize for medical scholarship is awarded annually to the graduate making the highest combined average for the full four years' course. It consists of a gold medal and sometimes a small sum in cash. The Sidney K. Simon Memorial Prize of about $50 is awarded to students who make the best grades in any one of the following subjects: diseases of the digestive tract, nutritional diseases or tropical medicine. The Jacob C. Geiger Medal, available to seniors or graduate students, is offered yearly for the best thesis on a public health problem that is of importance to either the Southern States or countries contiguous to the Southern States.